ONTAP 9.17.1 REST API reference

REST API reference

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REST API reference

Getting started with the ONTAP REST API

ONTAP adds support for an expansive RESTful API. The documentation below provides information about the types of API calls available with ONTAP, as well as details about using each API endpoint. You can learn more about the ONTAP REST API in the ONTAP automation doc site: https://docs.netapp.com/us-en/ontap-automation/index.html.

Using the ONTAP REST API online documentation

Each API method includes usage examples, as well as a model that displays all the required and optional properties supported by the method. Click the *Model* link, available with each API method, to see all the required and optional properties supported by each method.

Features for all ONTAP APIs

Getting started with the ONTAP REST API

Overview

Let's review some key things about RESTful APIs and how they're implemented in ONTAP:

- REST API URLs identify the resources that you'll be working with, including clusters, SVMs, and storage.
- REST APIs use HTTP methods GET, POST, PATCH, DELETE, and OPTIONS to indicate their actions.
- REST APIs return common HTTP status codes to indicate the results of each call. Additional error details can be included in the results body.
- REST APIs request and response bodies are encoded using JSON.
- REST APIs support hyperlinking among resources using the Content-Type "application/hal+json".
- REST API requests will be rejected when the wait queue is full. This is an uncommon occurrence and is designed to prevent a DOS attack.
- GET calls on collections usually return only name and UUID by default. If you want to retrieve additional properties, you need to specify them using the "fields" query parameter.
- ONTAP supports query-based DELETE or PATCH for all collection endpoints.
- REST APIs follows RFC3986 Section 5.2.4 regarding relative reference resolution.

If you're already familiar with the ONTAPI API (also known as ZAPI), there are some similarities between ONTAP REST APIs and ONTAPI. For example:

- Both support the same transport and security mechanisms.
- Both paginate results based on either number of seconds or number of records.
- Both support filtering the returned records based on property values.
- Both support limiting the returned properties.
- Both support concurrent requests. If ONTAP temporarily can't handle additional calls, it will respond with an HTTP error status code of 429 or 503 (depending on the kind of limit hit) and an error message in the body explaining the limit encountered.

However, there are important differences between REST APIs and the ONTAP CLI and ONTAPI that you should understand as well:

- In many cases, ONTAP REST APIs use different names for fields and features.
- REST APIs do not expose infrequently used CLI parameters.
- REST APIs do not treat the cluster or nodes as an SVM (aka Vserver).
- REST GET APIs support specifying a maximum time before paginating results. However, the default time is 15 seconds for REST (instead of 90 seconds for ONTAPI).
- REST APIs are generally ordered by UUID or ID, so a rename operation using the PATCH method doesn't change the path keys.
- REST APIs use one or more of the following properties to identify a resource: "name", "uuid", "id".
- REST APIs often execute the equivalent of multiple CLI commands in a single request.
- REST API properties use underscores instead of hyphens between words.
- REST API dates are always in ISO-8601 format.
- REST API comparisons between enum values (for <, >, ranges, and `order_by`) are done alphabetically. (In CLI and ONTAPI, enum comparisons are done based on an internal value for the enum.)
- REST API field '<' queries exclude records where the specified field is not set. You can add "\|null" (eg: limit=<10\|null) to also return records where the specified field is not set.

Relative reference resolution

In accordance with RFC3986 Section 5.2.4, ONTAP REST API removes dot segments to resolve the path. The examples below describe this behavior.

This request uses non-URL-encoded dots:

```
curl -siku <username>:<password> -X GET
"https://mgmt_ip_address/api/storage/volumes/<volume_uuid>/files/.."
```

The previous request is resolved to this:

```
curl -siku <username>:<password> -X GET
"https://mgmt_ip_address/api/storage/volumes/<volume_uuid>"
```

In the previous example, the volume information is returned rather than the file. Users should be cautious when using non-URL-encoded ".." since it can cause accidental data loss when making a delete request.

This request is interpreted as a delete to the volume rather than the file because of `...`

```
curl -siku <username>:<password> -X DELETE
"https://<mgmt_ip_address>/api/storage/volumes/<volume_uuid>/files/.."
```

To avoid this issue, dots should be URL-encoded to `%2E`. The previous request should look like this:

```
curl -siku <username>:<password> -X DELETE
"https://<mgmt_ip_address>/api/storage/volumes/<volume_uuid>/files/%2E%2E"
```

HAL linking

Hypertext Application Language (HAL)

ONTAP REST APIs use HAL as the mechanism to support Hypermedia as the Engine of Application State (HATEOAS). When an object or attribute is returned that identifies a specific resource, a HAL-encoded link is also returned so that you can easily discover resources and be able to obtain more details about the resource.

Example

```
"aggregate": {
    "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
    "name": "aggr0",
    "_links": {
        "self": {
            "href": "/api/storage/aggregates/19425837-f2fa-4a9f-8f01-
712f626c983c"
        }
    }
}
```

Query parameters

Overview

The following is a list of all the globally supported query parameters. This list is intended as a quick reference for syntax purposes. The query parameters are described in more detail in other sections of this documentation. Note that multiple queries can be combined using an "&".

```
# Request specific fields
fields=<field>[,...]

# Don't error due to an unknown field in "fields=" (default is false)
ignore_unknown_fields=<true|false>

# Query fields by value. If the value contains query characters
(*|,!<>..), it must be quoted to avoid their special query meaning
<field>=<query value>

# Return the records array
return_records=<true|false>

# Timeout and return after the specified number of seconds
return_timeout=<0..120 seconds>

# The number of records to collect (or act on for query-based
PATCH/DELETE) before returning
max_records=<number of records>

# Request a customized sort ordering
order_by=<field [asc|desc]>[,...]
$orderBy=<field [asc|desc]>[,...]

# Pretty print JSON response bodies
pretty=<true|false>

# Continue after encountering a failure. Only applicable to query-based
PATCH and DELETE.
continue_on_failure=<true|false>

# Begin returning records starting at an offset from the first record
offset=<offset from first record>
```

Operations on multiple records

Overview

Although they are not documented as individual methods in the list of REST APIs, every API supporting POST, PATCH, or DELETE, also supports operations on multiple records in the collection. These collection based operations can be specified as either a list of records, allowing each record to be mutated individually, or as a query that applies the same change to multiple records in the collection.

Option 1: Record-based POST, PATCH, and DELETE

APIs supporting POST, PATCH, or DELETE support these operations on the collection itself by specifying a `records` array in the JSON body. Each entry in this array must match the schema of an individual record of

the API. Parsing failures are returned synchronously. All other validations are performed asynchronously, including those that are usually returned synchronously for asynchronous APIs.

Rolling back changes on failure

POST and PATCH make a best-effort attempt to perform the operation atomically by rolling back any changes made to prior records if an operation on a later record fails. This behavior can be overridden via the `continue_on_failure` query parameter. When this parameter is *true* (default: *false*), the job performs the operation on every input record regardless of prior failures. If any failures are encountered in `continue_on_failure` mode, they are reported as the result of the job, but the successfully mutated records are not rolled back. DELETE operations do not attempt to roll back failures and always operate in `continue_on_failure` mode.

Serial and parallel operations

Most APIs support performing operations in parallel, and record-based operations take advantage of this, operating on multiple of the provided records at once. If there is some interdependence between the provided records, such as a hierarchical set of objects, the `serial_records=true` query parameter can be used to force the operation to be performed in order. APIs that do not support parallel operations run serially, by default. From a job tracking perspective, there is no difference between these two modes other than the speed at which the operation completes.

Asynchronous job and results

Unless the records array is directly documented in the API as synchronous, every record-based operation is performed as a job and follows the usual rules for asynchronous jobs. In addition to the usual `/api/cluster/jobs` record of the job, these operations return a job results href link. The link refers back to the API on which the operation was performed and can be followed after the job is complete. Job results include the current state of the records and fields operated on by the job. If a POST operation was successful on a record, that record is included in job results. If a DELETE operation was successful, that record is not included in the job results because it is no longer part of the collection. The same concept applies to failures. If the POST of a record fails, the record is not included in the job results because it is not part of the collection. The results also include any errors or rollback errors encountered by the job. The job results link is also returned as the Location header from a record-based POST job, supporting the same pattern for determining any generated identifiers as a single record POST. Note that the job results link does not support all of the usual GET features. Requesting specific fields and querying a subset of the records is supported, but *max_records* and *return_timeout* as well as other such query parameters for controlling the iteration of the collection is are not supported.

Unique identifiers go in the body

For PATCH and DELETE, any unique identifiers not included in the URI must be included in the JSON body of each record. For example, to DELETE a single volume, the API is usually `/api/storage/volumes/{uuid}`. To delete multiple volumes via a `records` array, the API is `/api/storage/volumes`, and the UUID of each volume is included in the JSON body of each record. For sub-endpoints with unique identifiers embedded in the path, such as `/api/storage/volumes/{volume.uuid}/files/{path}`, the `volume.uuid` is included once in the URI and is not included in each record. The `path` is included with each record.

Examples

Creating two volumes

```
# The API:
POST /api/storage/volumes
```

```
# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/volumes' -H 'accept:
application/hal+json' -d '{ "records": [
    { "svm": { "name": "svm1" }, "name" : "vol1", "size": "1GB",
"aggregates": [ { "name": "aggr1" } ] },
    { "svm": { "name": "svm1" }, "name" : "vol2", "size": "1GB",
"aggregates": [ { "name": "aggr1" } ] } ] }'
```

```
# The response:
{
  "job": {
    "uuid": "cc979874-a441-11eb-a707-005056bbbc41",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/cc979874-a441-11eb-a707-005056bbbc41"
      },
      "results": {
        "href": "/api/storage/volumes?job_results_uuid=cc979874-a441-11eb-
a707-005056bbbc41"
      }
    }
  }
}
```

```
# GET the job results:
curl -X GET 'https://<mgmt-
ip>/api/storage/volumes?job_results_uuid=cc979874-a441-11eb-a707-
005056bbbc41' -H 'accept: application/hal+json'
```

```
# The response:
{
  "records": [
    {
      "uuid": "cc9915c8-a441-11eb-a707-005056bbbc41",
      "name": "vol1",
      "size": 1073741824,
      "aggregates": [
```

```
        {
          "name": "aggr1",
          "uuid": "a589e251-a096-44be-b5d3-67ccf92d27e7"
        }
      ],
      "svm": {
        "name": "svm1"
      },
      "_links": {
        "self": {
          "href": "/api/storage/volumes/cc9915c8-a441-11eb-a707-
005056bbbc41"
        }
      }
    },
    {
      "uuid": "cc9c1eea-a441-11eb-a707-005056bbbc41",
      "name": "vol2",
      "size": 1073741824,
      "aggregates": [
        {
          "name": "aggr1",
          "uuid": "a589e251-a096-44be-b5d3-67ccf92d27e7"
        }
      ],
      "svm": {
        "name": "svm1"
      },
      "_links": {
        "self": {
          "href": "/api/storage/volumes/cc9c1eea-a441-11eb-a707-
005056bbbc41"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/storage/volumes?job_results_uuid=cc979874-a441-11eb-
a707-005056bbbc41"
    }
  }
}
```


Creating two LUNs with a failure and an additional failure during rollback

Note that the LUN that was not rolled back is reported as being present in the results because it now exists in the collection.

```
# The API:
POST /api/storage/luns
```

```
# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/luns' -H 'accept:
application/hal+json' -d '{ "records": [
    { "svm": { "name": "svm1" }, "name" : "/vol/vol1/lun1", "space": {
"size": "1GB" }, "os_type": "linux" },
    { "svm": { "name": "svm1" }, "name" : "/vol/vol1/lun2", "space": {
"size": "5GB" }, "os_type": "linux" } ] }'
```

```
# The response
{
  "job": {
    "uuid": "09d0c372-a445-11eb-a707-005056bbbc41",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/09d0c372-a445-11eb-a707-005056bbbc41"
      },
      "results": {
        "href": "/api/storage/luns?job_results_uuid=09d0c372-a445-11eb-
a707-005056bbbc41"
      }
    }
  }
}
```

```
# GET the job results:
curl -X GET 'https://<mgmt-ip>/api/storage/luns?job_results_uuid=09d0c372-
a445-11eb-a707-005056bbbc41' -H 'accept: application/hal+json'
```

```
# The response:
{
  "records": [
    {
      "uuid": "2287871f-fbcf-4d64-ae89-59328dd755b3",
      "svm": {
        "name": "svm1"
      },
      "name": "/vol/vol1/lun1",
      "os_type": "linux",
      "space": {
        "size": 1073741824
      },
      "_links": {
        "self": {
          "href": "/api/storage/luns/2287871f-fbcf-4d64-ae89-59328dd755b3"
        }
      }
    }
  ],
  "num_records": 1,
  "errors": [
    {
      "message": "POST of record \"svm.name: svm1, name: /vol/vol1/lun2\"
failed. Reason: Volume offline.",
      "code": "262287"
    }
  ],
  "rollback_errors": [
    {
      "message": "DELETE of record \"uuid: 2287871f-fbcf-4d64-ae89-
59328dd755b3\" failed. Reason: Volume offline.",
      "code": "262287"
    }
  ],
  "_links": {
    "self": {
      "href": "/api/storage/luns?job_results_uuid=09d0c372-a445-11eb-a707-
005056bbbc41"
    }
  }
}
```

Record-based Errors

ONTAP Error Response Codes

Error Code	Description	HTTP Code
262287	A single record in a bulk records request failed for the given reason.	400
262288	A record-based operation failed and was left in a partially completed state.	400
262289	A record-based job progress message. N of M records complete.	200
262290	A record-based job progress message during rollback. N of M records remaining.	200
262291	The operation did not complete within the system timeout period. Wait a few minutes, and then try the operation again.	400
262292	The records operation was partially completed. The following failures were encountered.	400
262293	Job is still running. Wait for the job to complete and then try the operation again.	400
262294	Job is not associated with this API.	400

Option 2: Query-based PATCH and DELETE

APIs supporting PATCH or DELETE requests on a resource instance also support PATCH or DELETE on the collection, as long as at least one field is specified in the query portion of the URL. A PATCH or DELETE request issued on a collection is equivalent to internally doing a query-based GET, followed by a serial PATCH or DELETE operation on each matching record. However, it only does the operation for `return_timeout` seconds, which is 15 seconds, by default. If a query-based operation is not completed before `return_timeout` seconds, the API returns a next link. The client must use the next link with the same HTTP method to continue the operation. Query-based operations will not continue to the next record until the operation on the prior record is completed, even for operations that are normally asynchronous.

Example

```
# Modify the state of all volumes named "simpson" to be offline
PATCH /api/storage/volumes?name=simpson
{ "state": "offline" }
```

Record filtering

Overview

Records may either be filtered by performing queries that only apply to a single field at a time (though multiple of such queries may be done simultaneously for different fields), or by applying queries that search across a set of fields for a value fulfilling a single specified query.

Filtering records with single field queries

You can filter the results of a GET call using any attribute. The supplied query can either be for an exact value or can leverage special query operators.

```
<field>=<query value>
```

Filtering allows you to select objects where the specified field matches the supplied query, or which can contain wildcards, ranges, negations, or an OR-defined list of the above. The special query operators include the following:

Wildcard: `*`

```
abc*
abc*xyz

***xyz
```

Comparison: `< > <= >=`

```
<10
>=joe
```

Range: `..`

```
3..10
jim..joe
```

Negation: `!`

```
!3
!joe
!abc*
!jim..joe
```

Any of a list: `|`

```
3|5
3|5..9|>100
```

Escaping: `{} and ""`

The special query characters above can be treated literally, with no special meaning, by enclosing the value in either double quotes or curly brackets.
In order to escape double quotes or curly brackets and treat it literally you must enclose them with curly brackets.

```
"joe*"  # The double quotes escape the '*' and treat it as a literal
{a|b}   # The curly brackets escape the | and treat it as a literal
{{jim}} # The double curly brackets escape the curly brackets and treats
it as '{jim}'
{"abc"} # The curly brackets escape the double quotes and treats it as
'"abc"'
```

Filtering records with cross-field queries

Cross-field queries are useful when multiple fields should be searched for a value or some combination of values. Whereas traditional queries only allow a single field to be searched for a value, cross-field queries will return rows where any field in a specified set of fields matches the query. Cross-field queries may only be used for GET requests.

The fields to be queried across are specified in the "query_fields=" parameter. This should be a comma-delimited list of fields, or simply `*` to search across all fields.
To specify the query to use in the search, pass in the "query=" parameter to a GET request with the string to use as the query. Fields may also be excluded from searching prefixing with '!'. This is useful if all fields are specified with '*', and then certain fields wish to be excluded, or if an an entire object was queried, to exclude certain sub-fields.

Structure of the query

The query string represents a pattern to search for in all fields specified.

The `*` character is used to indicate wildcard character matching. `*` matches 0 or more of any character. For a query of "foo*bar", matches will include "foo123abcbar", "foobar", and "foo___123abcbar".
To search for any match among several possible patterns, the values may be ORed together with the '|' character. For example, to search for "foo" OR "bar", pass in "query=foo|bar". This may be extended to an arbitrary number of values, such as "query=foo|bar|baz".

Similarly, the query can be used to specify that multiple patterns must be found across all fields specified in "query_fields" for a row to be returned. To specify that multiple patterns must be found, include a space between each one. For example, to search across fields where the fields must contain both "foo" AND "bar", provide "query=foo bar". Again, this may be used on an arbitrary number of patterns. To search for rows that contain all of "foo" AND "bar" AND "baz" within the fields specified, provide "query=foo bar baz".

It should be noted that it is possible for all of the matches to a query to appear in a single field. For example, if "query=foo bar", and a field queried contains "foo bar blah", it will be considered a match. Obviously the queries matches can also be spread across different fields.

Examples

The following data is used for the examples below:

id	name	color	flavor	number	tree
1	widget1	blue	chocolate	1 2 3	black cherry
2	widget2	red	spinach	three fifty	maple
3	widget3	rainbow	strawberry	thirty	spruce
4	widget4	brown	strawberry chocolate	thirteen	willow

Request: 'query_fields=color', 'query=red'

Response:

id	name	color	flavor	number	tree
2	widget3	red	spinach	three fifty	maple

Explanation: The only row with a "color" column matching "red" is row 2.

Request: 'query_fields=id,number', 'query=3'

Response:

id	name	color	flavor	number	tree
1	widget1	blue	chocolate	1 2 3	black cherry
3	widget3	rainbow	strawberry	forty two	spruce

Explanation: Column "id" for row 3 matches the query, and column "number" for number for row 1 matches as well.

Request: 'query_fields=flavor', 'query=chocolate\|strawberry'

Response:

id	name	color	flavor	number	tree
1	widget1	blue	chocolate	1 2 3	black cherry
3	widget3	rainbow	strawberry	forty two	spruce
4	widget4	brown	strawberry chocolate	thirteen	willow

Explanation: This query returns rows containing chocolate and/or strawberry in the flavor column. Rows 1, 2, and 4 all contain matches. Row 4 actually matches both queries.

Request: 'query_fields=flavor', 'query=chocolate strawberry'

Response:

id	name	color	flavor	number	tree
4	widget4	brown	strawberry chocolate	thirteen	willow

Explanation: This query returns rows containing chocolate AND strawberry in the flavor column. Only row 4 contains matches for both queries.

Request: 'query_fields=name,number', 'query=*3\|three'

Response:

id	name	color	flavor	number	tree
1	widget1	blue	chocolate	1 2 3	black cherry
2	widget2	red	spinach	three fifty	maple
3	widget3	rainbow	strawberry	forty two	spruce

Explanation: Searches across the name and number columns for a value either ending in '3', or containing "three". Row 1 contains 3 in the number field matching the first query, row 3 has a name of "widget3", matching the first query, and row 2 has a number containing three, matching the second query.

Request: 'query_fields=*', 'query=1\|2\|3 th*'

Response:

id	name	color	flavor	number	tree
2	widget2	red	spinach	three fifty	maple
3	widget3	rainbow	strawberry	thirty	spruce

Explanation: Searches across all columns, looking for rows where a row both contains either 1 and/or 2 and/or 3, and contains a value starting with "th". Row 1 contains a value matching 1 or 2 or 3, but has no column that begins with th. Similarly, row 4 has a value beginning with "th", but does not contain 1 or 2 or 3. Therefore only rows 2 and 3 are returned, which match both queries.

Cross-Field Query Errors

ONTAP Error Response Codes

Error Code	Description	HTTP Code
262272	The specified query contains an unmatched quote.	400
262273	Both 'query_fields' and 'query' must be specified if either one is specified.	400
262274	The specified query is either empty or is equivalent to an empty query.	400

Error Code	Description	HTTP Code
262274	The parameters 'query_fields' and 'query' may only be specified for GET requests.	400
262275	At least one field must be specified for the cross-field query.	400
262276	A field was specified twice for the 'query_fields' parameter.	400

Requesting specific fields

Overview

By default, calling GET on a collection generally returns only the properties that uniquely identify the record, along with a HAL 'self' link to the resource instance. However, you can choose the specific fields you want using the `fields` parameter. The `fields` parameter can also be used with GET when retrieving a single resource instance.

For discovery purposes, except for the CLI passthrough, the client can retrieve all standard properties using `fields=*`. These are the same properties returned when a GET is called on the specific instance using the path keys. However, using `fields=\*` is more expensive than selecting only the specific fields that are needed. In addition, because future releases may include additional properties in this list, or remove properties that were included by default, we strongly discourage using this in client-side software that is depending on specific fields being returned. To use the same list of fields when dealing with multiple versions of ONTAP, specify `ignore_unknown_fields=true`.

Some fields are more expensive to retrieve and are not included when using `fields=*` (or the instance-level GET). These fields are noted in the documentation. They can be returned either by specifying the fields directly, or by using `fields=\*\*`. However, we again strongly discourage this from being encoded into any client-side software. The performance of client software will suffer if a future version of ONTAP adds support for additional expensive properties.

```
fields=<field>[,...]
```

The `fields` input parameter allows you to specify exactly which fields you want to be returned.

Objects with fields

When an API contains fields that are objects, an entire object can be specified to return every field within the object. Individual fields within the object can be specified using dotted notation, as demonstrated below. Braces can be used to specify multiple fields within an object without repeating the object name. Braces can be nested within each other to select individual attributes within an object hierarchy.

> Dotted notation for arrays does not include array indices.

Examples

```
{
  "a": "<string>",
  "b": {
    "c": "<string>",
    "d": "<string>"
  },
  "e": [
    {
      "f": "<string1>",
      "g": "<string1>"
    },
    {
      "f": "<string2>",
      "g": "<string2>"
    }
  ]
}
```

Example `fields` query:

```
fields=a,b     // Fetch a, b.c, and b.d
fields=a,b.c,e // Fetch a, b.c, e.f, and e.g
fields=b.d     // Fetch b.d
fields=e.f     // Fetch e.f
fields=b,!b.c  // Fetch b.*, but not b.c
fields=b.{c,d} // Fetch b.c and b.d
```

Records and pagination

Records

Several query parameters control the return of records.

```
return_records=<true|false>
```

The default setting for `return_records` is `true` for GET calls and `false` for all other methods. When `false`, the array of records is not returned.

```
return_timeout=<0..120 seconds>
```

The `return_timeout` parameter specifies the number of seconds the cluster spends performing an operation before returning. The allowed range is `0` to `120` seconds. If the timeout is reached, GET calls return the records collected along with a pagination link. Other methods return and complete asynchronously. See

Non-blocking-operations for more details.

The default setting for `return_timeout` is `15` seconds for GET calls. For all other methods it is `0` seconds. This means that these calls might execute asynchronously in order to return as fast as possible.

> If the `order_by` parameter is specified, the operation might take longer because the collection is sorted before it is returned.

```
max_records=<number of records>
```

The `max_records` parameter limits the number of records that are returned (or acted on) before providing the "next" pagination link.

```
offset=<offset from the first record>
```

The `offset` parameter determines how many records to skip over prior to returning the first record.

For example, if you have a total of 15 records, and specify an offset of 10, only records 11-15 inclusive will be returned. When combined with a query or sorting specification, the offset will apply after the query or sorting, meaning that you will get records beginning at the Nth record, taking into account the query and sort order. Note that the computational cost of skipping over N records is likely as great as actually returning those N records.

Pagination

All calls to GET on a resource collection allow you to page through the results. If the `max_records` parameter is not specified, the cluster returns as many records as possible within the `return_timeout` time threshold. The number of records returned can be further limited by specifying a value for the `max_records` parameter. When the operation reaches either the `return_timeout` or the `max_records` threshold, it stops and returns the records as well as a HAL link that can be used to get the next page of records. It is possible for a pagination link to be returned even if there are no additional records. This occurs because the cluster does not check if there is an additional record before returning when it reaches a threshold. When there are potentially additional records, the response header will also contain a `Link` header containing the link followed by `rel="next"`.

The following is an example of the "next" link, which returns with a collection of records:

```
"_links": {
    "next": {
        "href":
"/api/storage/aggregates?start.aggregate=aggr25&max_records=25"
    }
}
```

Count only

The response to collection operations includes a `num_records` field. By passing `return_records=false`

with a GET call, you can retrieve the number of records without returning the records themselves. However, if either the `return_timeout` or `max_records` threshold is reached, an incomplete or partial number of records is returned and the "next" link must be called to retrieve additional record counts. All the partial counts must be added together to calculate the total count.

Record sorting

Overview

By default, records in a collection are returned in the order defined by the object. You can change the order by specifying the `order_by` query parameter. Most uses of the `order_by` parameter collect and reorder *all records* in the collection. This can be expensive when the collection is large. Therefore, clients are discouraged from paginating through the results with `max_records` when using `order_by`.

```
order_by=<field [asc|desc]>[,...]
```

If you want to sort on multiple fields (where the prior key value is the same), separate any fields (and optional direction) with a comma.

By default, sorting is done in ascending order based on the field type's ordering. If `desc` is specified after a field name, that field is sorted in descending order. Combining this with `max_records` allows you to see the `top` or `bottom` records based on the value of the specified field(s). When using this `top` or `bottom` functionality, queries on certain fields might require more time to search the entire collection regardless of the number of records actually returned.

Important Notes:

- When you use the `order_by` parameter, the `return_timeout` might be exceeded because the collection is sorted before it is returned.
- Using `order_by` on either a property of type array, or a nested property within an array (not including the records array), returns the records in an unspecified order.
- If the order_by value includes the direction (asc or desc), then you must make sure that the space between the field name and the direction is properly URL encoded when it is sent to the server. You may use either a `%20` or a `+` to encode the space, but if you send a space character, the server will respond with an error (400 Bad Request). Most programming language libraries will automatically do this encoding for you. Check the documentation of your language and/or library.

Examples

```
# Sort the volume collection from largest to smallest by size:
GET /api/storage/volumes?order_by=size+desc

# Find the top 5 applications using the most IOPS:
GET
/api/application/applications?order_by=statistics.iops.total+desc,name+asc
&max_records=5

# Find the top 10 applications using the most space and then

# if multiple applications are using the same space, sort them by IOPS:
GET
/api/application/applications?order_by=statistics.space.used+desc,statisti
cs.iops.total+desc&max_records=10
```

Response body

Overview

Every API call returns a top-level JSON object. These JSON objects includes GET calls that contain an array of records. This nesting technique allows metadata about the resource or resource collection to be returned as well as each resource instance.

GET calls that return an array of records can contain the following top-level elements:

```
{
  "records": [ {}, ... ]
  "num_records": <N>
  "_links": {
    "self": {
      "href": ...
    },
    "next": {
      "href": ...
    }
  }
}
```

- `records` - The array of records.
- `num_records` - The number of records in the array.
- `_links` - Links to relevant APIs, possibly including:
  - `self` - A link to retrieve the same data again.
  - `next` - If there are potentially more records, a link to retrieve the next page of records.

Custom response bodies

Some APIs might include additional top-level elements. For example, some APIs may include a top-level `errors` array which can include errors if the array of records is incomplete (for reasons other than pagination). See the documentation for each API to check for custom top-level elements.

Error objects

When an error occurs, an error object is returned in the response body. The error code is an integer returned in a JSON string. The optional `target` element is returned when ONTAP determines the error is due to a specific input field that you've supplied.

```
"error": {
  "message": "<string>",
  "code": "<integer>",
  "target": "<string>"
}
```

The following error codes can be returned by any ONTAP REST endpoint. Refer to individual endpoint documentation for additional endpoint specific error codes.

ONTAP Error Response Codes

Error Code	Description	HTTP Code
1	An entry with the same identifiers already exists.	409
2	A field has an invalid value, is missing, or an extra field was provided.	400
3	The operation is not supported.	405
4	An entry with the specified identifiers was not found.	404
6	Permission denied.	403
7	Resource limit exceeded.	429 or 503
8	Resource in use.	409 or 503
65541	RPC timed out.	500
65552	Generic RPC failure.	500
65562	Internal RPC error	500
262145	Application code returned an unexpected exception.	500
262160	There are too many requests already being processed. Retry after a short delay.	429
262177	Missing value.	400

Error Code	Description	HTTP Code
262179	Unexpected argument. Argument shown in error message body.	400
262185	Invalid value with value in the body of the error.	400
262186	A field is used in an invalid context with another field, as shown in error message body.	400
262188	A field was specified twice. Location of assignments shown in error message body.	400
262190	You must provide one or more values to apply your changes.	400
262194	The expression is missing a value.	400
262196	Field cannot be set in this operation.	400
262197	Invalid value provided for field. Value and field shown in error message body.	400
262198	A request body is not allowed on GET, HEAD, and DELETE.	400
262199	Invalid JSON with error location provided in body of the error.	400
262200	Invalid JSON range, with range provided in the body of the error.	400
262201	Invalid JSON due to unknown formatting issue.	400
262202	Field is considered secret and should not be provided in the URL.	400
262203	Field is not supported in the body of a PATCH request.	400
262210	Unable to retrieve all required records within the timeout. This "order_by" query is not supported under the current system load with the current number of records in the collection.	500
262211	POST request on a REST API does not support filtering on an attribute. Attributes must be in the request body.	400
262212	Request is missing required value.	400

Error Code	Description	HTTP Code
262220	Wildcard fields=* is not allowed for CLI-based REST APIs.	400
262222	Specified value is listed more than once for this field.	400
262245	Invalid value with reason provided in body of the error.	400
262247	Invalid value for a field, with value and field in body of the error.	400
262248	A value is missing assignment operator.	400
262249	Field name is not supported for GET requests because it is not a readable attribute.	400
262250	Field name cannot be queried in a GET request because it is not a readable attribute.	400
262254	Invalid JSON input, an array was expected.	400
262255	An array was found in the JSON when it was not expected.	400
262268	The field is not supported as an order_by= field.	400
262277	The query_fields and query parameters may only be specified for GET requests.	400
262282	Property was specified twice.	400
262286	Mismatching braces found in the fields= query.	400
263149	Resource tag limit was reached while creating or modifying the resource.	400
393271	A node is out of quorum. Body of error message identifies node.	500
1245212	Insufficient space available to complete the operation.	500
1260882	Specified SVM not found.	400
2621462	The specified SVM does not exist or cannot be accessed by this user.	400
2621471	An invalid SVM name was specified.	400

Error Code	Description	HTTP Code
2621519	An invalid SVM name was specified.	400
2621574	This operation is not permitted on an SVM that is configured as the destination of a MetroCluster SVM relationship.	400
2621576	Configuration changes for a locked SVM are not permitted.	409
2621643	The specified SVM name is too long.	400
2621685	SVM name length cannot be zero.	400
2621706	The specified values refer to different SVMs.	400
6691623	User is not authorized for this operation.	400
8586226	Specified UUID not found.	400
39387137	A provided URL is invalid.	400

Synchronous and asynchronous operations

Overview

POST, PATCH, or DELETE operations that can take more than `2` seconds are considered *asynchronous* operations. They are implemented as non-blocking operations. Any API call that is expected to return in less than `2` seconds is considered *synchronous*. Synchronous operations ignore the `return_timeout` parameter.

API response

If the `return_timeout` is less than the time it takes for an operation to complete, the server returns the code `202 Accepted` after waiting for the specified `return_timeout` seconds. The default `return_timeout` for non-blocking operations is `0` seconds, meaning the operation returns as fast as possible. However, the operation never returns the success code `200 OK`, but instead returns either an error or the code `202 Accepted`.

The Location header

When a POST operation that is creating a resource returns `201 Created` (synchronous) or `202 Accepted` (asynchronous), the response header includes the `Location` of the resource. For asynchronous operations, a GET call on this resource link may return code `404 Not Found` until the operation successfully completes. Use the returned job link instead of the Location link to determine when the asynchronous operation is complete. POST operations that return code `200 OK` do not populate the Location header.

Example

The following example shows how to send a POST request and retrieve the Location header in return. Here "readonly" privileges are added to "/api/cluster" for the "test" security role:

```
# The API
POST "/api/security/roles/{owner.uuid}/{name}/privileges"
```

- "/api/security/roles/" is the whole collection of roles in the cluster.
- {owner.uuid} and {name} are the identifiers for a particular role and combined with the path to the collection form the URI for that role.
- The /privileges part of this API specifies that we want to operate on the sub-collection of privileges for a particular role.
- The POST request to this path will return a Location header that contains the URI for the newly created privilege. That URI can be accessed with GET in future calls to view the state of the privilege entry.

```
# The call:
curl -i -X POST -d '{"access":"readonly", "path":"/api/cluster"}'
"https://<mgmt-ip>/api/security/roles/001c3044-d15c-11ec-8091-
005056bb49e4/test/privileges"

# The response:
HTTP/1.1 201 Created
Date: Mon, 06 Jun 2022 15:11:42 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Location: /api/security/roles/001c3044-d15c-11ec-8091-
005056bb49e4/test/privileges/%2Fapi%2Fcluster
Content-Length: 3
Content-Type: application/hal+json
```

The Location Header provides the location of the resource that is newly created as a part of the POST request. %2Fapi%2Fcluster is the identifier for the new privilege in the example above.

```
Doing a GET on the Location URL provided:

#The call:
curl -i -X GET "https://<mgmt-ip>/api/security/roles/001c3044-d15c-11ec-
8091-005056bb49e4/test/privileges/%2Fapi%2Fcluster"

# The response:
HTTP/1.1 200 OK
Date: Tue, 07 Jun 2022 17:04:50 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Length: 284
Content-Type: application/hal+json
Vary: Accept-Encoding
{
  "owner": {
  "uuid": "001c3044-d15c-11ec-8091-005056bb49e4"
  },
  "name": "test",
  "path": "/api/cluster",
  "access": "readonly",
  "_links": {
    "self": {
      "href": "/api/security/roles/001c3044-d15c-11ec-8091-
005056bb49e4/test/privileges/%2Fapi%2Fcluster"
    }
  }
}
```

Tracking non-blocking operations

Non-blocking or asynchronous operations are executed using *jobs*. The response to a non-blocking operation includes information about the job performing the operation, including a HAL link to the job resource. The job record also includes `state` and `message` fields. The `message` field indicates the progress of the operation while the `state` field indicates `running`. When a job is successful, the `state` and `message` fields indicate `success`. If an operation fails for any reason, the job's `state` reports `error`, and the `message` describes the problem that the operation encountered.

For POST operations, when a job is successfully completed, you can use the link from the `Location` header of the original response to retrieve the resource.

See GET /cluster/jobs

HTTP status codes

Overview

The following supported HTTP status codes are returned by ONTAP:

- 200 OK: Returned for success when not creating a new object
- 201 Created: Returned for success after the creation of an object
- 202 Accepted: Returned when a job has been successfully started, but the operation is not complete
- 400 Bad Request: Returned if the input could not be parsed
- 401 Unauthorized: Returned if user authentication failed
- 403 Forbidden: Returned for authorization (RBAC) errors
- 404 Not Found: Returned when the specified resource does not exist
- 405 Method Not Allowed: Returned when the specified resource does not support the method (for example, POST or DELETE calls)
- 409 Conflict: Returned when there is a conflict with a different object that must be created, modified, or deleted before this operation can succeed
- 429 Too Many Requests: Returned when the client has sent more requests than the server can handle. The client should try again later (defined by the Retry-After header)
- 500 Internal Error: Returned for most other internal error codes
- 502 Bad Gateway: Returned if the application is temporarily unreachable. Try again later
- 503 Service Unavailable: Returned if the server is temporarily overloaded. Try again later.

HTTP methods

Overview

The ONTAP REST API supports the following HTTP methods:

- GET: Supported on all collections to retrieve the records
- POST: When supported, calls on a collection to create the supplied resource
- PATCH: When supported, calls on a specific resource to update the supplied properties
- DELETE: When supported, calls on a specific resource to delete the resource
- HEAD: Supported wherever GET is supported. It makes a GET call, but only returns the HTTP headers
- OPTIONS: Supported on every endpoint so that you can determine which HTTP methods are supported

Size properties

Overview

Many objects contain properties related to various sizes. Examples can be found in the `aggregate` object, `volume` object, `lun` object and `nvme_namespace` object. These properties are documented as type `integer`.

Unless otherwise documented, all sizes are reported in GET in bytes.

Depending on the development language-specific code generation, the API typically also requires an integer

value in bytes for POST and PATCH input as well.

Where a string value is accepted, such as query parameters and ad-hoc curl requests, any of the following suffixes can be used to specify different units:

Suffix	Definition
KB	kilobytes (1024 bytes, aka kibibytes)
MB	megabytes (KB x 1024, aka mebibytes)
GB	gigabytes (MB x 1024, aka gibibytes)
TB	terabytes (GB x 1024, aka tebibytes)
PB	petabytes (TB x 1024, aka pebibytes)

SVM tunneling

Overview

SVM tunneling allows for the scoping of REST APIs to any SVM from the cluster admin SVM interface. The HTTP headers "X-Dot-SVM-Name" and/or "X-Dot-SVM-UUID" are an alternative to supplying svm.name and/or svm.uuid in the request query or body. This allows for setting a context for an HTTP connection and reusing it for multiple calls. The cluster management interface or node management interface can be used instead of the desired SVM's interface. When either SVM tunneling or the SVM interface are used, any svm.name and svm.uuid properties need not be supplied in the request body, even if they are documented as required in the API. If they are supplied and do not match the SVM specified by the tunneling headers, then a 400 error will be returned.

Examples

Creates a new volume on SVM "vs0":

```
curl  -H "X-Dot-SVM-Name:vs0" -X POST "https://<mgmt-
ip>/api/storage/volumes" -d
'{"name":"vol1","aggregates":[{"name":"aggr1"}]}'
{
  "job": {
    "uuid": "b271e19d-c5cb-11e9-b97d-005056ac2211",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/b271e19d-c5cb-11e9-b97d-005056ac2211"
      }
    }
  }
}
```

Retrieves all volumes on SVM "vs0":

```
curl -H "X-Dot-SVM-Name:vs0" -X GET "https://<mgmt-
ip>/api/storage/volumes"
{
  "records":[
  {
    "uuid":"a61e474-929a-4c78-882a-b72986ccf276",
    "name":"root_vs0",
    "_links":{
      "self":{
        "href":"/api/storage/volumes/aa61e474-929a-4c78-882a-b72986ccf276"
      }
    }
  },
  {
    "uuid":"b26c64f5-c5cb-11e9-b97d-005056ac2211",
    "name":"vol1",
    "_links":{
      "self":{
        "href":"/api/storage/volumes/b26c64f5-c5cb-11e9-b97d-005056ac2211"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self":{
    "href":"/api/storage/volumes"
    }
  }
}
```

Deletes a volume on SVM "vs0" using the X-Dot-SVM-UUID header:

```
curl -H "X-Dot-SVM-UUID:85ebedff-c43e-11e9-bc27-005056ac2211" -X DELETE
"https://<mgmt-ip>/api/storage/volumes?name=vol1"
{
  "jobs":[
    {
      "uuid":"4acf3f58-c5d2-11e9-b97d-005056ac2211",
      "_links":{
        "self":{
          "href":"/api/cluster/jobs/4acf3f58-c5d2-11e9-b97d-005056ac2211"
        }
      }
    }
  ],
  "num_records": 1,
  "_links":{
    "self":{
      "href":"/api/storage/volumes?name=vol1"
    }
  }
}
```

Retrieves all IP interfaces on SVM "vs3":

```
curl -H "accept: application/json" -H "X-Dot-SVM-Name:vs3" -X GET
"https://<mgmt-ip>/api/network/ip/interfaces"
{
  "records":[
    {
      "uuid":"83aeeac9-c5d8-11e9-b97d-005056ac2211",
      "name": "vs3_data_1"
    },
    {
      "uuid":"9c612bc0-c5a5-11e9-b97d-005056ac2211",
      "name":"vs3_data"
    }
  ],
  "num_records": 2
}
```

Tagging Resources for Tracking Purposes

Overview

It may be useful for tools that use REST to categorize resources using tags for the purposes of tracking or grouping resources for certain purposes. For example, an application might want to create a set of resources

for a certain project or group and set a tag on all of those resources that indicates which project or group they were created for. The API provides a standardized property in some APIs for doing so called `_tags`. This property begins with an underscore to indicate that it is a generic property that is used for the same purpose across many different APIs, much like the `_links` property is.

Examples

Retrieve a list of all volumes that were provisioned for the staging environment:

```
curl -X GET "https://<mgmt-
ip>/api/storage/volumes?_tags=environment:staging"
{
  "records": [
    {"uuid": "a3af94b9-f33e-4fcd-80f7-96b8bb78229d", "name": "vol1",
"_tags": ["environment:staging"]},
    {"uuid": "6cbfef49-d234-4d37-8150-87ee15983696", "name": "vol2",
"_tags": ["environment:staging", "team:accounting"]},
    ...
  ]
}
```

Tag a volume as belonging to the accounting group when the volume is created

```
curl -X POST -d '{"name": "acct_vol", "svm": {"name": "svm1"},
"aggregates": [{"name": "aggr1"}], "_tags": ["team:accounting"]}'
"https://<mgmt-ip>/api/storage/volumes"
```

Remove an existing tag while leaving the rest

```
# Method 1: use the path to the volume as path key to the resource-tags
endpoint
curl -X DELETE "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources/%2Fapi%2Fstorage%2Fvolumes%6cbfef49-d234-
4d37-8150-87ee15983696"

# Method 2: patch the volume directly

## get the current tags
curl -X GET "https://<mgmt-ip>/api/storage/volumes/6cbfef49-d234-4d37-
8150-87ee15983696?fields=_tags
{"uuid": "6cbfef49-d234-4d37-8150-87ee15983696", "name": "vol2", "_tags":
["environment:staging", "team:accounting"]}

## put back only the desired tags
curl -X PATCH -d '{"_tags": ["team:accounting"]}' "https://<mgmt-
ip>/api/storage/volumes/6cbfef49-d234-4d37-8150-87ee15983696"
```

Remove all tags

```
curl -X PATCH -d '{"_tags": []}' "https://<mgmt-
ip>/api/storage/volumes/6cbfef49-d234-4d37-8150-87ee15983696"
```

Using the private CLI passthrough with the ONTAP REST API

REST API access to CLI commands

To help CLI and ONTAP users transition to the ONTAP REST API, ONTAP provides a private REST API endpoint that can be used to access any CLI command. Usage of this API call is recorded and returned in the AutoSupport data collection so that NetApp can identify usability and functionality improvements in the REST API for future releases. There is no per-API documentation for the REST API access for each CLI command. Unlike the documented REST APIs, the API paths and properties for the CLI passthrough correspond very closely to the CLI. There are several rules that govern all the differences between a CLI command and the REST API mirroring the CLI command.

Rules for path differences when accessing a CLI command through the REST API

The API paths mirror the CLI paths, except for the use of the "show", "create", "modify", and "delete" verbs. Instead of using these four CLI verbs in the REST API, the corresponding HTTP methods must be used (GET, POST, PATCH, and DELETE). The four CLI verbs are removed from the API path supporting a command. For any commands where the last verb is hyphenated and begins with one of these verbs (for example, "show-space" or "delete-all"), you must remove the verb and following hyphen from the path. Any space in a full command path becomes a forward slash in the REST API (for example, "system node" becomes "/api/private/cli/system/node"). For non-show CLI commands that use non-standard verbs, the POST method should be used on the full path with the final verb in the API path. For example, "volume rehost" becomes "POST /api/private/cli/volume/rehost" and "cluster add-node" becomes "POST /api/private/cli/cluster/add-node".

To know which HTTP methods are supported for an API call, both documented and CLI-based, clients can use the "OPTIONS" HTTP method. For example, using OPTIONS on "/api/private/cli/volume" returns 'OK' with the HTTP "Allow" header containing a list of the supported HTTP methods (for example, "Allow: GET, HEAD, OPTIONS, POST, DELETE, PATCH"). For feature-specific CLI verbs, you can use OPTIONS on the API path. For example, using OPTIONS on "/api/private/cli/volume/restrict" returns with the HTTP header "Allow: OPTIONS, POST". Some of the CLI "show" commands do not contain the standard verb. For example, calling OPTIONS on "/api/private/cli/cluster/add-node-status" returns "Allow: GET, HEAD, OPTIONS".

There are some commands in the CLI that will not work using REST APIs. This includes most show commands that do not support "show -fields" in the CLI. The REST API also does not support CLI commands that create a new shell (like "run" and "vserver context").

Here are several examples of mappings from the ONTAP CLI to the ONTAP REST API for the /api/private/cli path:

- volume show → GET /api/private/cli/volume
- volume create → POST /api/private/cli/volume
- volume modify → PATCH /api/private/cli/volume
- volume delete → DELETE /api/private/cli/volume
- volume restrict → POST /api/private/cli/volume/restrict
- volume show-space → GET /api/private/cli/volume/space
- volume show-footprint → GET /api/private/cli/volume/footprint
- cluster add-node → POST /api/private/cli/cluster/add-node
- cluster add-node-status → GET /api/private/cli/system/node/add-node-status
- system node coredump show → GET /api/private/cli/system/node/coredump
- system node coredump delete → DELETE /api/private/cli/system/node/coredump
- system node coredump delete-all → DELETE /api/private/cli/system/node/coredump/all

Rules for field differences when accessing a CLI command through the REST API

All CLI parameters are supported in the CLI-based REST APIs. However, REST converts hyphens (-) in CLI parameter names to underscores (_) in the REST API JSON response body. In general, REST API responses use the same formatting for property values as ONTAPI. For example, enumerated values are formatted in lowercase instead of uppercase and with underscores instead of hyphens in the REST API response body. Both CLI and ONTAPI formats are allowed on input. Also similar to ONTAPI, sizes and percentages in REST are encoded as integers in bytes. Unlike ONTAPI or the CLI, date and time values in REST are encoded with the ISO-8601 format. All fields that you want returned from the GET call must be specified using the `fields` parameter. Note that the /api/private/cli/… APIs do not support "fields=*".

Examples

Retrieve OPTIONS for volumes endpoint (with results contained in header):

```
curl -X OPTIONS "https://<mgmt-ip>/api/private/cli/volume" --include
Allow: GET, HEAD, OPTIONS, POST, DELETE, PATCH
{
}
```

GET size and percent-used for all volumes:

```
curl -X GET "https://<mgmt-ip>/api/private/cli/volume?fields=size,percent-
used&pretty=false"
{
  "records": [
    { "vserver": "vs1", "volume": "vol1", "size": 20971520,
"percent_used": 73 },
    { "vserver": "vs1", "volume": "vol2", "size": 20971520,
"percent_used": 87 },
    ...
  ]
}
```

GET size and percent-used for a specific volume:

```
curl -X GET "https://<mgmt-
ip>/api/private/cli/volume?volume=vol2&pretty=false"
{
  "records": [
    { "vserver": "vs1", "volume": "vol2", "size": 209715203864,
"percent_used": 89 },
    ...
  ]
}
```

POST a new volume with all required attributes:

```
curl -X POST "https://<mgmt-ip>/api/private/cli/volume" -d
'{"volume":"vol3","vserver":"vs0","aggregate":"aggr1"}'
{
  "job": {
    "uuid": "f7b5f5cb-54a2-11e9-930a-005056ac6a3f",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f7b5f5cb-54a2-11e9-930a-005056ac6a3f"
      }
    }
  },
  "cli_output": "[Job 36] Job is queued: Create vol2."
}
```

Attempt to DELETE an online volume:

```
curl -X DELETE "https://<mgmt-
ip>/api/private/cli/volume?vserver=vs1&volume=vol1"
{
  "num_records": 0,
  "error: {
    "message": "Volume vol1 in Vserver vs1 must be offline to be
deleted.",
    "code": "917658"
  }
}
```

PATCH a volume to become offline:

```
curl -X PATCH "https://<mgmt-
ip>/api/private/cli/volume?vserver=vs1&volume=vol1" -d '{ "state":
"offline" }'
{
  "num_records": 1,
  "cli_output: "Volume modify successful on volume vol1 of Vserver vs1.\n"
}
```

DELETE the offline volume:

```
curl -X DELETE "https://<mgmt-
ip>/api/private/cli/volume?vserver=vs1&volume=vol1"
{
  "jobs": [
    {
      "uuid": "3f35a934-4b40-11e9-9f4d-005056bbf4eb",
      "_links": {
        "self": {
          "href": "/api/cluster/jobs/3f35a934-4b40-11e9-9f4d-005056bbf4eb"
        }
      }
    }
  ],
  "num_records": 1,
  "cli_output": "[Job 1243] Job succeeded: Successful\n"
}
```

When POST is called for a command that uses a job, the REST API does not wait for the job to complete, unless `return_timeout` is specified. However, PATCH and DELETE calls on the command path (using queries on key fields in the query portion of the URI) wait up to 15 seconds for the operation to complete if the `return_timeout` parameter is not specified.

DELETE an offline volume without waiting:

```
curl -X DELETE "https://<mgmt-
ip>/api/private/cli/volume?vserver=vs1&volume=vol2&return_timeout=0"
{
  "jobs": [
    {
      "uuid": "a7138c5e-4b69-11e9-9f4d-005056bbf4eb",
      "_links": {
        "self": {
          "href": "/api/cluster/jobs/a7138c5e-4b69-11e9-9f4d-
005056bbf4eb",
        }
      }
    }
  ],
  "num_records": 1,
  "cli_output": "[Job 1247] Job is queued: Delete vol1.\n"
}
```

CLI message output

As shown in the previous example, any non-field and non-error based output that would have appeared in the CLI is returned in a top-level `cli_output` attribute in the response body. This does not contain normal CLI headers or field values. It only displays messages that were printed to the CLI.

HTTP status codes

Error codes in the response body are mapped to the most appropriate HTTP status codes. In cases where this is not done, the HTTP status code defaults to 500. This does not necessarily indicate that the error is internal to ONTAP.

Security

All CLI-based REST APIs are RBAC-controlled, based on the role of the authenticated user and have the same protections they have in the CLI.

Location of CLI fields for CLI-based REST APIs:

- POST APIs: All CLI fields must be provided in the request body.
- GET APIs: All desired CLI fields (except keys) must be specified in the `fields` parameter. The non-key fields returned via the CLI will not be returned if not requested. The client can also provide a query for any field.

- PATCH APIs: The client can provide a query for any field, but at least one field must have a query. To modify only a single record, all CLI keys must contain an exact query. All new values for the object must be provided in the request body.
- DELETE APIs: The client can provide a query for any field, but at least one field must have a query. To delete only a single record, all CLI keys must contain an exact query. Non-attribute inputs (such as `force`) must be provided in the query portion of the URI.

Application

Application overview

Overview

ONTAP application APIs simplify storage management by using terminology specific to a type of application. This application-specific terminology can be used to provision and manage ONTAP storage objects. A single call using application-specific parameters provisions storage and enables protocol access for an application following NetApp best practices. You can view and manage the ONTAP objects making up the application as a group using the application APIs. The library of available application templates already includes several database and virtualization applications.

APIs

There are several application APIs that must be used to fully manage an application. Templates are used to represent any parameters specific to a given application. Some APIs expose applications in terms of their specific template, while others only expose a generic view that all applications share. The template view is present on the *templates* and *applications* APIs (although these APIs do also include some generic fields). The *components* and *snapshots* APIs are entirely generic and do not differ across types of applications.

The following section provides an overview of each API, followed by a lifecycle example of managing an application to demonstrate how the APIs can be used together.

Template

A template is an ONTAP representation of a specific type of application. Each template represents one type of application, the parameters that can be used to customize it, the layout of its storage, and how it can be accessed. Templates are intended to expose an application in terms specifically applicable to an administrator of a given application. As such, traditional ONTAP storage elements are generally not included in an application template.

The template APIs can be used to discover what templates are currently available. The ONTAP API documentation also includes a model of the templates. The template APIs generally provide the same information as the documentation, but the template APIs might provide more up-to-date details about the default values of template parameters based on the current ONTAP configuration. However, only the ONTAP API documentation includes a full description of each template parameter, its usage, and whether it is optional.

Application

The application APIs are the only interfaces that allow management of an application using template properties.

The application object includes the following three sections:

1. Generic metadata about the application, including common fields such as the name of the application, the template used to provision it, and the generation number of the application.
2. Statistics information about the application, including space and IOPS details about the entire application and each of its components. These are expensive to collect and should only be requested when needed using a *fields*= query.
3. A template view of the application. The application object itself presents a mutually exclusive list of all possible templates. Only one of these fields can be used per application. The name of the field corresponds to the name of the template used by the application. Currently, the creation of a new application and the modification of the storage service for an existing application are supported through the template parameters.

Component

The component API offers a generic view of the application and how to access the application from the host application. This is the only API that exposes the underlying ONTAP storage elements of which the application is composed. It is read-only; it cannot support modifications specific to the type of application it is presenting.

The component object includes the following details for an application:

1. The NFS export rules for accessing the application from the host.
2. The CIFS share and users that can access the application from the host.
3. For IP-based protocols, the IP addresses that are best suited for accessing the component.
4. The underlying storage elements that make up the component, such as volumes or LUNs.
5. The SAN initiators that can access the application from the host.

Snapshot

The snapshot APIs offer full CRUD for application-level snapshots. Application snapshots can be flagged as either crash-consistent or application-consistent. From the perspective of ONTAP, there is no difference between the two. It is the responsibility of the administrator to ensure that the application is in a consistent state before flagging a snapshot as application-consistent. Use of the SnapCenter Backup Management suite is recommended to ensure correct interaction between host applications and ONTAP.

Example

The following example outlines the APIs necessary to manage applications and how they fit together. However, this example does not provide detailed information on each API. See the documentation for the individual APIs for more information.

1) Discover the templates

This documentation, which includes the model of each template as part of the *templates* and *applications* APIs, is the easiest and most comprehensive way to discover the available templates. The *templates* API can also be used to query the system for templates in a programmatic way.

To discover the templates available to provision an Oracle application, the following query is used.

```
# The API:
/api/application/templates

# The query:
name=oracle*

# The call:
curl -X GET "https://<mgmt-ip>/api/application/templates?name=oracle*" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "name": "oracle_on_nfs", "description": "Oracle using NFS."
  },

  {
    "name": "oracle_on_san", "description": "Oracle using SAN."
  },

  {
    "name": "oracle_rac_on_nfs", "description": "Oracle RAC using NFS."
  },
  {
    "name": "oracle_rac_on_san", "description": "Oracle RAC using SAN."
  }

],
"num_records": 4
}
```

2) Create an application

Now that we know the possible templates, we use one to create an application. The template properties differ from template to template, and can be found by exploring the model of the application object in this documentation. Each call to create an application must include the properties for exactly one template. These properties are provided under the property with the same name as the template. Other than the template properties, the only other required properties to create an application are the SVM and name.

In the following call example, not all of the template properties are included. Where a property is not needed or the default is sufficient, the property can be excluded. In this case using the *oracle_on_nfs* template, the *archive_log*, and *protection_type* are not included. The template name, *oracle_on_nfs*, is specified above the group of template properties, after the names of the application and the SVM.

Creating an application is asynchronous, so the response for this API includes information about the job doing the work. The response header also includes the *location* of where the application can be found if the job is successful.

Prior to creating an application, the following prerequisites must be met for the protocols associated with the template:

- Licences must be installed.
  - POST /cluster/licensing/licenses
- Aggregates must exist with enough available space and IOPS to satisfy the requested size.
  - POST /storage/aggregates
- An SVM must exist with protocol services enabled.
  - POST /svm/svms
- LIFs must exist. For SAN applications, only High Availability groups where each node has at least one LIF will be considered for placement of storage objects.
  - POST /network/ip/interfaces
  - POST /network/fc/interfaces

The following are not required prior to creating an application, but might be necessary before connecting to the application:

- Network routes must be created to access ethernet based LIFs.
  - POST /network/ip/routes
- For volumes created by this operation to be successfully mounted, ONTAP requirements related to mounting must be met.

```
# The API:
/api/application/applications

# The query:
No query is needed for this command. Optionally, you can specify the
return_timeout or set the return_records flag to alter the behavior of the
command.

# The body:
```

```
{
"name": "my_ora_app",
"svm": {
  "name": "svm1"
},
"oracle_on_nfs": {
  "db": {
    "size": "2GB",
    "storage_service": {
      "name": "value"
    },
    "nfs_access": [
        {
            "access": "rw",
            "host": "0.0.0.0/0"
        }
    ]
  },
  "redo_log": {
    "size": "1GB"
  },
  "ora_home": {
    "size": "1GB"
  }
}
}

# The call:
    curl -X POST "https://<mgmt-ip>/api/application/applications" -H
"accept: application/hal+json" -H "content-type: application/json" -d '{
"name": "my_ora_app", "svm": { "name": "vs1" }, "oracle_on_nfs": { "db": {
"size": "2GB", "storage_service": { "name": "value" }, "nfs_access": [ {
"access": "rw", "host": "0.0.0.0/0" } ] }, "redo_log": { "size": "1GB" },
"ora_home": { "size": "1GB" } } }'

# The response:
{
"job": {
  "uuid": "dc0d01dd-df5a-11e7-b5d2-005056b47eb2",
  "id": 94,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/dc0d01dd-df5a-11e7-b5d2-005056b47eb2"
    }
  }
}
```

```
}

# The response header:
date: Tue, 12 Dec 2017 16:38:18 GMT
server: libzapid-httpd
content-type: application/hal+json
location: /api/application/applications/dbc10d87-df5a-11e7-b5d2-
005056b47eb2
cache-control: no-cache,no-store,must-revalidate
connection: Keep-Alive
keep-alive: timeout=5, max=100
content-length: 203
```

3) Wait for the application to be created

The call to create the application returns information about the job, including a HAL link to retrieve details about the job. The job object includes a state and a message to indicate the progress of the job. When the job is complete, and the application has been fully created, the message indicates success and the *state* of the job property is *success*.

For brevity purposes, the successful job response is shown here. On a real cluster, an application might take several seconds to several minutes to be created, depending on the system load. If the job is not complete, the *message* property includes a short description on the progress of the job, and the *state* indicates *running*.

```
# The API:
/api/cluster/jobs/{uuid}

# The call, provided by the HAL link from step 3:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/dc0d01dd-df5a-11e7-b5d2-
005056b47eb2" -H "accept: application/hal+json"

# The response:
{
"uuid": "dc0d01dd-df5a-11e7-b5d2-005056b47eb2",
"state": "success",
"message": "Complete: Success [0]",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/dc0d01dd-df5a-11e7-b5d2-005056b47eb2"
  }
}
}
```

4) Retrieve the new application

You can look up the application directly without listing all the applications. Use the *location* header that is included in the response when the application is created.

> The following example uses a query to retrieve only a small number of the application's properties.

```
# The API:
/api/application/applications/{uuid}

# The query:
fields=name,template.name,generation,state

# The call:
curl -X GET "https://<mgmt-ip>/api/application/applications/dbc10d87-df5a-
11e7-b5d2-005056b47eb2?fields=name,template.name,generation,state" -H
"accept: application/json"

# The response:
{
"uuid": "dbc10d87-df5a-11e7-b5d2-005056b47eb2",
"name": "my_ora_app",
"template": { "name": "oracle_on_nfs" },
"generation": 2,
"state": "online"
}
```

5) Discover how to access the application

The components API provides information on how to access the storage that is provisioned for the application.

For brevity, only the names of the components are requested. See the API documentation for more information on the other available fields.

```
# The API:
api/application/applications/{application.uuid}/components

# The query:
fields=name

# The call:
curl -X GET "https://<mgmt-ip>/api/application/applications/dbc10d87-df5a-
11e7-b5d2-005056b47eb2/components?fields=name" -H "accept:
application/json"

# The response:
{
"records": [
  { "uuid": "e06fb407-df5a-11e7-b5d2-005056b47eb2", "name": "db" },
  { "uuid": "e0709732-df5a-11e7-b5d2-005056b47eb2", "name": "ora_home" },
  { "uuid": "e07158eb-df5a-11e7-b5d2-005056b47eb2", "name": "redo_log" }
],
"num_records": 3
}
```

---

6) Update the application

To update the storage service, the same template that is used for creating the application is reused, but with only the storage_service properties set. In the generic SAN and NAS templates, the name of each component must also be specified.

In this example, the cluster only supports the *value* storage service, so modifications of the application to a faster storage service fail. Note how the error message indicates the parameter that caused the problem.

Application modification, like application creation, is an asynchronous operation. If a valid command is passed, the API returns information about the job instead of an error.

```
# The API:
/api/application/applications/{uuid}

# The body:
{
"oracle_on_nfs": { "db": { "storage_service": { "name": "extreme" } } }
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/application/applications/dbc10d87-
df5a-11e7-b5d2-005056b47eb2" -H "accept: application/hal+json" -H
"content-type: application/json" -d '{ "oracle_on_nfs": { "db": {
"storage_service": { "name": "extreme" } } } }'

# The response:
{
"error": {
  "message": "Invalid value for parameter \"oracle_on_nfs.db.storage-
service.name\": extreme. Supported values are: value.",
  "code": "65995152"
}
}
```

---

7) Manage snapshots

For applications created with the *local protection_type* set to *hourly*, snapshots are automatically taken every hour. These snapshots can be retrieved or restored using the snapshot APIs. Snapshots can also be taken on demand using these APIs. It is important to note that the *consistency_type* flag of the snapshot is for record-keeping only: it is the responsibility of the administrator to ensure that the application is in a consistent state prior to flagging a snapshot as *application* consistent.

Take a snapshot manually:

```
# The API:
/api/application/applications/{uuid}/snapshots

# The body:
{
  "name": "little_bobby_tables",
  "consistency_type": "crash"
}

# The call:
curl -X POST "https://<mgmt-ip>/api/application/applications/dbc10d87-
df5a-11e7-b5d2-005056b47eb2/snapshots" -H "accept: application/hal+json"
-H "content-type: application/json" -d '{ "name": "little_bobby_tables",
"consistency_type": "crash"}'

# The response:
{}

# The response header:
date: Tue, 12 Dec 2017 17:40:10 GMT
server: libzapid-httpd
content-type: application/hal+json
location: /api/application/applications/dbc10d87-df5a-11e7-b5d2-
005056b47eb2/snapshots/dbc10d87-df5a-11e7-b5d2-
005056b47eb2_13_little_bobby_tables
cache-control: no-cache,no-store,must-revalidate
connection: Keep-Alive
keep-alive: timeout=5, max=100
content-length: 3
```

In the above example, the response body is empty, and the response header includes the *location* of the newly created snapshot. By default, all POST calls return an empty body unless a job is used to process the creation asynchronously. This behavior can be changed with the query flag *return_records*.

Restoring a snapshot uses an action API. Action paths can also be performed asynchronously as jobs, as with creating or modifying an application. The response header does not include a *location*, because this action is not creating a resource.

```
# The API:
/api/application/applications/{application.uuid}/snapshots/{snapshot.uuid}
/restore

# The call:
curl -X POST "https://<mgmt-ip>/api/application/applications/dbc10d87-
df5a-11e7-b5d2-005056b47eb2/snapshots/dbc10d87-df5a-11e7-b5d2-
005056b47eb2_13_little_bobby_tables/restore" -H "accept:
application/hal+json"

# The response:
{
"job": {
  "uuid": "00e81690-df64-11e7-b5d2-005056b47eb2",
  "id": 100,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/00e81690-df64-11e7-b5d2-005056b47eb2"
    }
  }
}
}

# The response header:
date: Tue, 12 Dec 2017 17:43:46 GMT
cache-control: no-cache,no-store,must-revalidate
server: libzapid-httpd
connection: Keep-Alive
keep-alive: timeout=5, max=100
content-length: 204
content-type: application/hal+json
```

Smart containers

Smart containers are traditional ONTAP storage objects such as FlexVol or FlexGroup created using the application REST API.

- NAS - FlexVolume, FlexGroup, and FlexCache objects
- SAN - LUNs
- NVME - Namespaces
- S3 - Object Store S3 Buckets

The benefits of creating a Smart Container are as follows:

- ONTAP determines the best placement for the storage object based on available performance and space capacity.
- Access controls can be optionally set.
- Snapshot schedules can be optionally set.
- A single atomic job that does all the above.

Smart containers are similar to generic enterprise applications (NAS, SAN, NVME), but with certain restrictions. Smart containers are restricted to one application-component. Any post-provisioning data management operations on smart containers must be performed via PATCH operations corresponding to the object created. However, the POST, GET and DELETE operations that exist for applications will also operate for smart containers.

To create a Smart Container the "smart_container:true" parameter must be provided.

Prior to creating a smart container, the following prerequisites must be met for the protocols associated with the template:

- Licences must be installed.
  - POST /cluster/licensing/licenses
- Aggregates must exist with enough available space to satisfy the requested size.
  - POST /storage/aggregates
- An SVM must exist with protocol services enabled.
  - POST /svm/svms
- LIFs must exist. For SAN objects, only High Availability groups where each node has at least one LIF to be considered for placement of storage objects.
  - POST /network/ip/interfaces
  - POST /network/fc/interfaces

The following are not required prior to creating a smart container:

- Network routes must be created to access Ethernet-based LIFs.
  - POST /network/ip/routes
- To mount volumes by this operation successfully, all ONTAP requirements related to mounting must be met.

Example

The following examples outline the APIs necessary to create a smart container. Two types of smart container creation are supported:

- A smart container with new ONTAP storage objects as specified in the JSON body.
- An existing ONTAP volume can be converted into a smart container (supported only on generic SAN and NVME templates).

This is an addendum to the example provided on how to create an application.

```
# The API:
/api/application/applications

# The query:
No query is needed for this command. Optionally, you can specify the
return_timeout or set the return_records flag to alter the behavior of the
command.

# The body:
Creates a smart container with new ONTAP storage objects:
{
"name": "my_container",
"svm": {
    "name":"vs1"
},
"template": {
    "name":"nas"
},
"smart_container": "true"
"nas": {
    "application_components": [
        {
            "share_count": "1",
            "name": "myVolume",
            "storage_service": {
                "name": "value"
            },
            "total_size": "100mb"
        }
    ]
}
}

Converting an existing volume into a smart container:
{
"name": "my_container",
"svm": {
    "name":"vs1"
},
```

```
"template": {
    "name":"san"
},
"smart_container": "true"
"san": {
    "application_components": [
        {
            "name": "existingVolume" #name of an existing volume
        }
    ]
}
}


# The call:
Creates a smart container with new ONTAP storage objects:
curl -X POST "https://<mgmt-ip>/api/application/applications" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d '{"name":
"my_container", "svm": {"name": "vs1"} , "smart_container": true ,
"template": {"name": "nas"} , "nas": {"application_components":
[{"share_count": "1", "name": "myVolume", "storage_service": {"name":
"value"} , "total_size": "100mb"} ] } }'

Converting an existing volume into a smart container:
curl -X POST "https://<mgmt-ip>/api/application/applications" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d '{"name":
"my_container", "svm": {"name": "vs1"} , "smart_container": true ,
"template": {"name": "san"} , "san": {"application_components": [{"name":
"existingVolume"} ] } }'

# The response:
 {
   "job": {
       "uuid": "5440db05-77f0-11e9-a5a0-005056bba32f",
       "_links": {
           "self": {
               "href": "/api/cluster/jobs/5440db05-77f0-11e9-a5a0-
005056bba32f"
           }
       }
   }
 }


# The response header:
date: Tue, 23 May 2019 16:38:18 GMT
```

```
server: libzapid-httpd
content-type: application/hal+json
location: /api/application/applications/5440db05-77f0-11e9-a5a0-
005056bba32f
cache-control: no-cache,no-store,must-revalidate
connection: Keep-Alive
keep-alive: timeout=5, max=100
content-length: 203
```

Smart Container Properties

- exclude_aggregates - This property is available for SAN, NAS and S3 Smart Containers. The list of aggregates specified in this property will be excluded while provisioning the storage object. If no suitable aggregate can be found to place the storage object, smart container provisioning will fail.

These sections are only allowed for smart containers and will return an error when provided on traditional applications. The following is an example of the error returned:

```
{
"error": {
  "message": "Field \"<field>\" is only supported on smart containers.",
  "code": "65996161"
  }
}
```

Updating the smart container

A smart container can be updated to add more LUNS and/or namespaces, with the same template used to create a smart container being reused, and with the following fields set:

- lun_count/namespace_count - represents the total number of LUNS/namespaces in the smart container.
- os_type - represents the OS type of the new LUNS/namespaces.
- total_size - represents the total size of the new LUNS/namespaces to be added.
- igroup_name/subsystem - represents the igroup/subsystem mapping for the new LUNS/namespaces. Updates are allowed only on generic SAN and NVME templates.

```
# The API:
/api/application/applications/{uuid}

# The body:
{
"san": {
    "application_components": [
        {
            "name": "myVolume",
            "lun_count": 4
            "total_size": "1gb"
            "os-type": "linux",
            "igroup_name": "igroup1"
        }
    ]
}
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/application/applications/dbc10d87-
df5a-11e7-b5d2-005056b47eb2" -H "accept: application/hal+json" -H
"content-type: application/json" -d '{ "san": { "application_components":
[{ "name": "myVolume", "total_size": "1GB", "lun_count": 4, "os_type":
"linux", "igroup_name": "igroup1"}]}}'
```

Application API limitations

Template versus generic

Applications can be represented in either template or generic terms. All applications can be represented in generic terms as a list of components. Each component generally maps to a field in the template. For example, Microsoft SQL Server applications have a component named *sqldata* that corresponds to the *db* parameter in the sql_on_san template. These mappings are usually straightforward and allow the templates to present application terminology, while the generic view uses the traditional naming schemes for ONTAP storage elements.

The current release supports the creation and modification of applications in template terms, but retrieval is not supported. The mapping from template to generic terms is left to your own discretion.za

ONTAP feature support

Application APIs are interfaces layered on top of traditional ONTAP storage. While the intent is to provide a full management suite through application APIs, some features of the underlying ONTAP objects are not directly supported through application APIs. Applications are provisioned using ONTAP best practices, so the need for additional modifications of the underlying objects should be minimal. If such modifications are necessary, the traditional ONTAP APIs can be used. The */api/application/{application.uuid}/components* API provides a *backing_storage* field that can be used to locate the storage objects associated with an application. This API also provides details of the NFS, SAN, or CIFS protocol access objects associated with the application.

The application APIs use the extra information known about the application to coordinate multiple ONTAP objects in unison. When using non-application APIs, certain settings might interfere with the ONTAP object coordination and cause the application APIs to behave unexpectedly. To continue to supply the full ONTAP feature set, these modifications on the underlying objects are allowed, but there is no guarantee that these modifications will not adversely affect the application experience. You should use this feature with caution.

Retrieve applications

GET `/application/applications`

Introduced In: 9.6

Retrieves applications.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `<template>` the property corresponding to the `template.name` of the application

Query examples

Numerous queries are available for classifying and sorting applications:

1. Return a list of applications sorted by name.

```
GET /application/applications?order_by=name
```

2. Return a list of applications for a specific SVM.

```
GET /application/applications?svm.name=<name>
```

3. Return a list of all SQL applications.

```
GET /application/applications?template.name=sql*
```

4. Return a list of all applications that can be accessed via SAN.

```
GET /application/applications?template.protocol=san
```

1. Return the top five applications consuming the most IOPS.

```
  GET /application/applications?order_by=statistics.iops.total
desc&max_records=5
```

The above examples are not comprehensive. There are many more properties available for queries. Also, multiple queries can be mixed and matched with other query parameters for a large variety of requests. See the per-property documentation below for the full list of supported query parameters.

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by UUID
name	string	query	False	Filter by name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
template.name	string	query	False	Filter by template.name
template.version	string	query	False	Filter by template.version
template.protocol	string	query	False	Filter by template.protocol
generation	string	query	False	Filter by generation
state	string	query	False	Filter by state
protection_granularity	string	query	False	Filter by protection granularity
rpo.is_supported	string	query	False	Filter by rpo.is_supported
rpo.local.name	string	query	False	Filter by rpo.local.name
rpo.local.description	string	query	False	Filter by rpo.local.description

Name	Type	In	Required	Description
rpo.remote.name	string	query	False	Filter by rpo.remote.name
rpo.remote.description	string	query	False	Filter by rpo.remote.description
rpo.components.name	string	query	False	Filter by rpo.components.name
rpo.components.uuid	string	query	False	Filter by rpo.components.uuid
rpo.components.rpo.local.name	string	query	False	Filter by rpo.components.rpo.local.name • Introduced in: 9.7
rpo.components.rpo.local.description	string	query	False	Filter by rpo.components.rpo.local.description
rpo.components.rpo.remote.name	string	query	False	Filter by rpo.components.rpo.remote.name
rpo.components.rpo.remote.description	string	query	False	Filter by rpo.components.rpo.remote.description
statistics.space.provisioned	string	query	False	Filter by statistics.space.provisioned
statistics.space.used	string	query	False	Filter by statistics.space.used
statistics.space.used_percent	string	query	False	Filter by statistics.space.used_percent

Name	Type	In	Required	Description
statistics.space.used_excluding_reserves	string	query	False	Filter by statistics.space.used_excluding_reserves
statistics.space.logical_used	string	query	False	Filter by statistics.space.logical_used
statistics.space.reserved_unused	string	query	False	Filter by statistics.space.reserved_unused
statistics.space.available	string	query	False	Filter by statistics.space.available
statistics.space.savings	string	query	False	Filter by statistics.space.savings
statistics.iops.total	string	query	False	Filter by statistics.iops.total
statistics.iops.per_tb	string	query	False	Filter by statistics.iops.per_tb
statistics.snapshot.reserve	string	query	False	Filter by statistics.snapshot.reserve
statistics.snapshot.used	string	query	False	Filter by statistics.snapshot.used
statistics.latency.raw	string	query	False	Filter by statistics.latency.raw
statistics.latency.average	string	query	False	Filter by statistics.latency.average
statistics.statistics_incomplete	string	query	False	Filter by statistics.statistics_incomplete

Name	Type	In	Required	Description
statistics.shared_storage_pool	string	query	False	Filter by statistics.shared_storage_pool
statistics.components.name	string	query	False	Filter by statistics.components.name
statistics.components.uuid	string	query	False	Filter by statistics.components.uuid
statistics.components.storage_service.name	string	query	False	Filter by statistics.components.storage_service.name
statistics.components.space.provisioned	string	query	False	Filter by statistics.components.space.provisioned
statistics.components.space.used	string	query	False	Filter by statistics.components.space.used
statistics.components.space.used_percent	string	query	False	Filter by statistics.components.space.used_percent
statistics.components.space.used_excluding_reserves	string	query	False	Filter by statistics.components.space.used_excluding_reserves
statistics.components.space.logical_used	string	query	False	Filter by statistics.components.space.logical_used
statistics.components.space.reserved_unused	string	query	False	Filter by statistics.components.space.reserved_unused

Name	Type	In	Required	Description
statistics.components.space.available	string	query	False	Filter by statistics.components.space.available
statistics.components.space.savings	string	query	False	Filter by statistics.components.space.savings
statistics.components.iops.total	string	query	False	Filter by statistics.components.iops.total
statistics.components.iops.per_tb	string	query	False	Filter by statistics.components.iops.per_tb
statistics.components.snapshot.reserve	string	query	False	Filter by statistics.components.snapshot.reserve
statistics.components.snapshot.used	string	query	False	Filter by statistics.components.snapshot.used
statistics.components.latency.raw	string	query	False	Filter by statistics.components.latency.raw
statistics.components.latency.average	string	query	False	Filter by statistics.components.latency.average
statistics.components.statistics_incomplete	string	query	False	Filter by statistics.components.statistics_incomplete
statistics.components.shared_storage_pool	string	query	False	Filter by statistics.components.shared_storage_pool
smart_container	string	query	False	Filter by smart_container • Introduced in: 9.7

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[application]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        },
        "snapshots": {
          "href": "/api/resourcelink"
        }
      },
      "creation_timestamp": "string",
      "delete_data": true,
      "generation": 0,
      "name": "string",
      "nas": {
        "application_components": [
          {}
        ],
        "cifs_access": [
          {
            "access": "string",
            "user_or_group": "string"
          }
        ],
        "cifs_share_name": "string",
        "exclude_aggregates": [
          {
            "name": "string",
            "uuid": "string"
          }
        ],
        "nfs_access": [
          {
            "access": "string",
```

```
            "host": "string"
          }
        ],
        "protection_type": {
          "local_policy": "string",
          "local_rpo": "string",
          "remote_rpo": "string"
        }
      },
      "nvme": {
        "components": [
          {
            "name": "string",
            "os_type": "string",
            "performance": {
              "storage_service": {
                "name": "string"
              }
            },
            "qos": {
              "policy": {
                "name": "string",
                "uuid": "string"
              }
            },
            "subsystem": {
              "hosts": [
                {
                  "dh_hmac_chap": {
                    "group_size": "string",
                    "hash_function": "string"
                  },
                  "nqn": "string",
                  "priority": "string"
                }
              ],
              "name": "string",
              "os_type": "string",
              "uuid": "string"
            },
            "tiering": {
              "policy": "string"
            }
          }
        ],
        "os_type": "string",
```

```
        "rpo": {
          "local": {
            "name": "string",
            "policy": "string"
          },
          "remote": {
            "name": "string"
          }
        }
      },
      "protection_granularity": "string",
      "rpo": {
        "components": [
          {
            "name": "string",
            "rpo": {
              "local": {
                "description": "string",
                "name": "string"
              },
              "remote": {
                "description": "string",
                "name": "string"
              }
            },
            "uuid": "string"
          }
        ],
        "local": {
          "description": "string",
          "name": "string"
        },
        "remote": {
          "description": "string",
          "name": "string"
        }
      },
      "s3_bucket": {
        "application_components": [
          {
            "access_policies": [
              {
                "actions": [
                  "string"
                ],
                "conditions": [
```

```
                {
                  "delimiters": [
                    "string"
                  ],
                  "max_keys": [
                    "integer"
                  ],
                  "operator": "string",
                  "prefixes": [
                    "string"
                  ],
                  "source_ips": [
                    "string"
                  ],
                  "usernames": [
                    "string"
                  ]
                }
              ],
              "effect": "string",
              "principals": [
                "string"
              ],
              "resources": [
                "string"
              ],
              "sid": "string"
            }
          ],
          "bucket_endpoint_type": "string",
          "comment": "string",
          "default_retention_period": "string",
          "exclude_aggregates": [
            {
              "name": "string",
              "uuid": "string"
            }
          ],
          "name": "string",
          "nas_path": "string",
          "qos": {
            "policy": {
              "name": "string",
              "uuid": "string"
            }
          },
```

```
            "retention_mode": "string",
            "snapshot_policy": {
              "name": "string",
              "uuid": "string"
            },
            "storage_service": {
              "name": "string"
            },
            "uuid": "string",
            "versioning_state": "string"
          }
        ],
        "protection_type": {
          "remote_rpo": "string"
        }
      },
      "san": {
        "application_components": [
          {
            "igroup_name": "string",
            "name": "string",
            "os_type": "string",
            "qos": {
              "policy": {
                "name": "string",
                "uuid": "string"
              }
            },
            "storage_service": {
              "name": "string"
            },
            "tiering": {
              "policy": "string"
            }
          }
        ],
        "exclude_aggregates": [
          {
            "name": "string",
            "uuid": "string"
          }
        ],
        "os_type": "string",
        "protection_type": {
          "local_policy": "string",
          "local_rpo": "string",
```

```
          "remote_rpo": "string"
        }
      },
      "state": "string",
      "statistics": {
        "components": [
          {
            "iops": {
              "per_tb": 0,
              "total": 0
            },
            "latency": {
              "average": 0,
              "raw": 0
            },
            "name": "string",
            "snapshot": {
              "reserve": 0,
              "used": 0
            },
            "space": {
              "available": 0,
              "logical_used": 0,
              "provisioned": 0,
              "reserved_unused": 0,
              "savings": 0,
              "used": 0,
              "used_excluding_reserves": 0,
              "used_percent": 0
            },
            "storage_service": {
              "name": "string",
              "uuid": "string"
            },
            "uuid": "string"
          }
        ],
        "iops": {
          "per_tb": 0,
          "total": 0
        },
        "latency": {
          "average": 0,
          "raw": 0
        },
        "snapshot": {
```

```
            "reserve": 0,
            "used": 0
          },
          "space": {
            "available": 0,
            "logical_used": 0,
            "provisioned": 0,
            "reserved_unused": 0,
            "savings": 0,
            "used": 0,
            "used_excluding_reserves": 0,
            "used_percent": 0
          }
        },
        "svm": {
          "name": "string",
          "uuid": "string"
        },
        "template": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string",
          "protocol": "string",
          "version": 0
        },
        "uuid": "string"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	
snapshots	href	

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
element_count	integer	The number of storage elements (LUNs for SAN) of the database to maintain. Must be an even number between 2 and 16. Odd numbers will be rounded up to the next even number within range.
replication_factor	integer	The number of data bearing members of the replicaset, including 1 primary and at least 1 secondary.
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

initiator_objects

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
os_type	string	The name of the host OS running the application.
primary_igroup_name	string	The initiator group for the primary.
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

Name	Type	Description
id	integer	The ID of an existing NFS export policy.

Name	Type	Description
name	string	The name of an existing NFS export policy.

component

Name	Type	Description
name	string	Name of the source component.

svm

Name	Type	Description
name	string	Name of the source SVM.

origin

Name	Type	Description
component	component	
svm	svm	

flexcache

Name	Type	Description
dr_cache	boolean	Dr-cache is a FlexCache volume create time option that has the same flexgroup-msid as that of the origin of a FlexCache volume. By default, dr-cache is disabled. The flexgroup-msid of the FlexCache volume does not need to be same as that of the origin of a FlexCache volume.
origin	origin	

policy

Name	Type	Description
name	string	The name of an existing QoS policy.
uuid	string	The UUID of an existing QoS policy. Usage: <UUID>

qos

Name	Type	Description
policy	policy	

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as quot;Plt;num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".
retention	retention	
snaplock_type	string	The SnapLock type of the smart container.

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

nas_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
export_policy	export_policy	
flexcache	flexcache	
name	string	The name of the application component.
qos	qos	
scale_out	boolean	Denotes a Flexgroup.
share_count	integer	The number of shares in the application component.
snaplock	snaplock	
snapshot_locking_enabled	boolean	Indicates whether Snapshot copy locking is enabled on the volume.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
access	string	The CIFS access granted to the user or group.
user_or_group	string	The name of the CIFS user or group that will be granted access.

exclude_aggregates

Name	Type	Description
name	string	The name of the aggregate to exclude. Usage: <aggregate name>
uuid	string	The ID of the aggregate to exclude. Usage: <UUID>

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

Name	Type	Description
access	string	The NFS access granted.
host	string	The name of the NFS entity granted access.

protection_type

Name	Type	Description
local_policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
cifs_access	array[app_cifs_access]	The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
cifs_share_name	string	The name of the CIFS share. Usage: <Share>
exclude_aggregates	array[exclude_aggregates]	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	

Name	Type	Description
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.
os_type	string	The name of the host OS running the application.
performance	performance	
qos	qos	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering

Name	Type	Description
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.
policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>

remote

Name	Type	Description
name	string	The remote RPO of the application.

rpo

Name	Type	Description
local	local	
remote	remote	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
os_type	string	The name of the host OS running the application.
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
mirrored	boolean	Specifies whether the redo log group should be mirrored.
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
ora_home	ora_home	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
copies	integer	The number of CRS volumes.

Name	Type	Description
size	integer	The size of the Oracle CRS/voting storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
ora_home	ora_home	
oracle_crs	oracle_crs	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the component. This indicates how often component Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

components

Name	Type	Description
name	string	Component Name.
rpo	rpo	
uuid	string	Component UUID.

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the application. This indicates how often application Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the application. A remote RPO of zero indicates that the application is synchronously replicated to another cluster.

rpo

Name	Type	Description
components	array[components]	
is_supported	boolean	Is RPO supported for this application? Generation 1 applications did not support Snapshot copies or MetroCluster.
local	local	
remote	remote	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
operator	string	Policy Condition Operator.
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
conditions	array[zapp_s3_bucket_application_components_access_policies_conditions]	conditions.
effect	string	Allow or Deny Access.
principals	array[string]	
resources	array[string]	
sid	string	Statement Identifier Usage: <(size 1..256)>

snapshot_policy

Name	Type	Description
name	string	The name of the snapshot policy that is used for the S3 bucket.
uuid	string	The UUID of the snapshot policy that is used for the S3 bucket. Usage: <UUID>

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
access_policies	array[zapp_s3_bucket_application_components_access_policies]	The list of S3 objectstore policies to be created.
bucket_endpoint_type	string	The type of bucket.
capacity_tier	boolean	Prefer lower latency storage under similar media costs.
comment	string	Object Store Server Bucket Description Usage: <(size 1..256)>
default_retention_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as quot;Plt;num>Y" and quot;Plt;num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported. Usage: {{<integer> days|years} | none}
exclude_aggregates	array[exclude_aggregates]	
name	string	The name of the application component.
nas_path	string	The path to which the bucket corresponds to.
qos	qos	

Name	Type	Description
retention_mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking. For s3 type buckets, the default value is no_lock.
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
snapshot_policy	snapshot_policy	
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>
versioning_state	string	Bucket Versioning State. For nas type buckets, this field is not set. For s3 type buckets, the default value is disabled.

protection_type

Name	Type	Description
remote_rpo	string	The remote RPO of the application.

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.
protection_type	protection_type	

san_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
qos	qos	
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
exclude_aggregates	array[exclude_aggregates]	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

access

Name	Type	Description
installer	string	SQL installer admin user name.
service_account	string	SQL service account user name.

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
access	access	
db	db	
log	log	
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application component.
total	integer	The total number of IOPS being used by the application component.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this component.
raw	integer	The cumulative response time in microseconds for this component.

snapshot

Name	Type	Description
reserve	integer	The amount of space reserved by the system for Snapshot copies.
used	integer	The amount of spacing currently in use by the system to store Snapshot copies.

space

Name	Type	Description
available	integer	The available amount of space left in the application component. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application component.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.

Name	Type	Description
used	integer	The amount of space that is currently being used by the application component. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application component.

storage_service

Name	Type	Description
name	string	The storage service name. AFF systems support the extreme storage service. All other systems only support value.
uuid	string	The storage service UUID.

components

Name	Type	Description
iops	iops	
latency	latency	
name	string	Component Name.
shared_storage_pool	boolean	An application component is considered to use a shared storage pool if storage elements for for other components reside on the same aggregate as storage elements for this component.
snapshot	snapshot	
space	space	

Name	Type	Description
statistics_incomplete	boolean	If not all storage elements of the application component are currently available, the returned statistics might only include data from those elements that were available.
storage_service	storage_service	
uuid	string	Component UUID.

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application.
total	integer	The total number of IOPS being used by the application.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this application.
raw	integer	The cumulative response time in microseconds for this application.

space

Name	Type	Description
available	integer	The available amount of space left in the application. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.
used	integer	The amount of space that is currently being used by the application. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.

Name	Type	Description
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application.

statistics

Name	Type	Description
components	array[components]	
iops	iops	
latency	latency	
shared_storage_pool	boolean	An application is considered to use a shared storage pool if storage elements for multiple components reside on the same aggregate.
snapshot	snapshot	
space	space	
statistics_incomplete	boolean	If not all storage elements of the application are currently available, the returned statistics might only include data from those elements that were available.

svm

Name	Type	Description
name	string	SVM Name. Either the SVM name or UUID must be provided to create an application.
uuid	string	SVM UUID. Either the SVM name or UUID must be provided to create an application.

self_link

Name	Type	Description
self	href	

template

Name	Type	Description
_links	self_link	
name	string	The name of the template that was used to provision this application.
protocol	string	The protocol access of the template that was used to provision this application.
version	integer	The version of the template that was used to provision this application. The template version changes only if the layout of the application changes over time. For example, redo logs in Oracle RAC templates were updated and provisioned differently in DATA ONTAP 9.3.0 compared to prior releases, so the version number was increased. If layouts change in the future, the changes will be documented along with the corresponding version numbers. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
size	integer	The size of the desktops. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

hyper_v_access

Name	Type	Description
service_account	string	Hyper-V service account.

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
size	integer	The size of the datastore. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	
hypervisor	string	The name of the hypervisor hosting the application.

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

application

Applications

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Application Name. This field is user supplied when the application is created.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.

Name	Type	Description
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
smart_container	boolean	Identifies if this is a smart container or not.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
svm	svm	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.

Name	Type	Description
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an application

POST `/application/applications`

Introduced In: 9.6

Creates an application.

Supported templates

- MongoDBOnSAN
- MultiComponentNAS
- NAS
- NVME
- OracleOnNFS
- OracleOnSAN

- OracleRACOnNFS
- OracleRACOnSAN
- S3
- SAN
- SAPHANAOnNFS
- SQLOnSAN
- SQLOnSMB
- VDIOnNAS
- VDIOnSAN
- VSIOnNAS
- VSIOnSAN

Template properties

The application APIs appear to be complex and long in this documentation because we document every possible template, of which there are currently 14. When creating an application, only a single template is used, so it is best to focus only on the template of interest. Other than the properties for the chosen template, only the `name` and `svm` of the application must be provided. The following three sections provided guidelines on using the properties of the templates, but the whole idea behind the templates is to automatically follow the best practices of the given application, so the only way to determine the exact list of required properties and default values is to dig in to the model section of the template. The templates are all top level properties of the application object with names matching the values returned by GET /application/templates .

Required properties

- `svm.uuid` or `svm.name` - The existing SVM in which to create the application.
- `name` - The name for the application.
- `<template>` - Properties for one template must be provided. In general, the following properties are required, however the naming of these may vary slightly from template to template.
  - `<template>.name` - The generic templates require names for the components of the application. Other templates name the components automatically.
  - `<template>.application_component.size` - This generally refers to the size of an application component, which may be spread across multiple underlying storage objects (volumes, LUNs, etc…).
  - One of the following must be specified:
- `nas.nfs_access` or an identifier (name or id) of an existing `export-policy`.
- `nas.cifs_access`
- `san.application_application.igroup_name`
  - To specify that a NAS application is not to be exposed via NFS nor CIFS:
- `nas.application_component.export_policy.name` is 'none', and
- `nas.application.cifs_share_name` is 'none'.
  - The name of the CIFS share can be provided through the `nas.application.cifs_share_name` attribute. If not provided, the CIFS share name will be the same as the `nas.application_component.name` attribute, including any suffix applied due to creating multiple

application components in one post.

  - `san.os_type` - All SAN applications require an os_type to be specified in some way. Some templates refer to this as the `hypervisor`.

Recommended optional properties

- `<template>` - The following properties are available in some templates.
  - `san.new_igroups.*` - SAN applications can use existing initiator groups or create new ones. When creating new initiator groups, `new_igroups.name` is required and the other properties may be used to fully specify the new initiator group.

Default property values

If not specified in POST, the follow default property values are assigned. It is recommended that most of these properties be provided explicitly rather than relying upon the defaults. The defaults are intended to make it as easy as possible to provision and connect to an application.

- `template.name` - Defaults to match the `<template>` provided. If specified, the value of this property must match the provided template properties.
- `<template>` - The majority of template properties have default values. The defaults may vary from template to template. See the model of each template for complete details. In general the following patterns are common across all template properties. The location of these properties varies from template to template.
  - `<template>.storage_service.name` - *value*
  - `<template>.protection_type.local_rpo` - *hourly* (Hourly snapshots)
  - `<template>.protection_type.remote_rpo` - *none* (Not MetroCluster)
  - `san.new_igroups.os_type` - Defaults to match the `os_type` provided for the application, but may need to be provided explicitly when using virtualization.

Optional components

A common pattern across many templates are objects that are optional, but once any property in the object is specified, other properties within the object become required. Many applications have optional components. For example, provisioning a database without a component to store the logs is supported. If the properties related to the logs are omitted, no storage will be provisioned for logs. But when the additional component is desired, the size is required. Specifying any other property of a component without specifying the size is not supported. In the model of each template, the required components are indicated with a red '*'. When a `size` property is listed as optional, that means the component itself is optional, and the size should be specified to include that component in the application.

POST body examples

1. Create a generic SAN application that exposes four LUNs to an existing initiator group, *igroup_1*.

```
  {
    "name": "app1",
    "svm": { "name": "svm1" },
    "san": {
      "os_type": "linux",
      "application_components": [
        { "name": "component1", "total_size": "10GB", "lun_count": 4,
"igroup_name": "igroup_1" }
      ]
    }
  }
```

1. Create an SQL application that can be accessed via initiator *iqn.2017-01.com.example:foo* from a new initiator group, *igroup_2*.

```
  {
    "name": "app2",
    "svm": { "name": "svm1" },
    "sql_on_san": {
      "db": { "size": "5GB" },
      "log": { "size": "1GB" },
      "temp_db": { "size": "2GB" },
      "igroup_name": "igroup_2",
      "new_igroups": [
        { "name": "igroup_2", "initiators": [ "iqn.2017-
01.com.example:foo" ] }
      ]
    }
  }
```

1. The following body creates the exact same SQL application, but manually provides all the defaults that were excluded from the previous call.

> The model of a *sql_on_san* application documents all these default values.

```
  {
    "name": "app3",
    "svm": { "name": "svm1" },
    "template": { "name": "sql_on_san" },
    "sql_on_san": {
      "os_type": "windows_2008",
      "server_cores_count": 8,
      "db": { "size": "5GB", "storage_service": { "name": "value" } },
      "log": { "size": "1GB", "storage_service": { "name": "value" } },
      "temp_db": { "size": "2GB", "storage_service": { "name": "value" }
},
      "igroup_name": "igroup_2",
      "new_igroups": [
        {
          "name": "igroup_2",
          "protocol": "mixed",
          "os_type": "windows",
          "initiators": [ "iqn.a.new.initiator" ]
        }
      ],
      "protection_type": { "local_rpo": "none" }
    }
  }
```

Learn more

- DOC /application
- Asynchronous operations

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.

Name	Type	Description
delete_data	boolean	Should application storage elements be deleted? An application is considered to use storage elements from a shared storage pool. Possible values are 'true' and 'false'. If the value is 'true', the application will be deleted in its entirety. If the value is 'false', the storage elements will be disassociated from the application and preserved. The application will then be deleted.
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Application Name. This field is user supplied when the application is created.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.

Name	Type	Description
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
smart_container	boolean	Identifies if this is a smart container or not.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
svm	svm	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.

Name	Type	Description
vsi_on_san	vsi_on_san	A VSI application using SAN.

Example request

```
{
  "creation_timestamp": "string",
  "generation": 0,
  "name": "string",
  "nas": {
    "application_components": [
      {}
    ],
    "cifs_access": [
      {
        "access": "string",
        "user_or_group": "string"
      }
    ],
    "cifs_share_name": "string",
    "exclude_aggregates": [
      {
        "name": "string",
        "uuid": "string"
      }
    ],
    "nfs_access": [
      {
        "access": "string",
        "host": "string"
      }
    ],
    "protection_type": {
      "local_policy": "string",
      "local_rpo": "string",
      "remote_rpo": "string"
    }
  },
  "nvme": {
    "components": [
      {
        "name": "string",
        "os_type": "string",
        "performance": {
          "storage_service": {
            "name": "string"
          }
        },
        "qos": {
```

```
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "subsystem": {
          "hosts": [
            {
              "dh_hmac_chap": {
                "controller_secret_key": "string",
                "group_size": "string",
                "hash_function": "string",
                "host_secret_key": "string"
              },
              "nqn": "string",
              "priority": "string"
            }
          ],
          "name": "string",
          "os_type": "string",
          "uuid": "string"
        },
        "tiering": {
          "control": "string",
          "object_stores": [
            {
              "name": "string"
            }
          ],
          "policy": "string"
        }
      }
    ],
    "os_type": "string",
    "rpo": {
      "local": {
        "name": "string",
        "policy": "string"
      },
      "remote": {
        "name": "string"
      }
    }
  },
  "protection_granularity": "string",
  "rpo": {
```

```
    "components": [
      {
        "name": "string",
        "rpo": {
          "local": {
            "description": "string",
            "name": "string"
          },
          "remote": {
            "description": "string",
            "name": "string"
          }
        },
        "uuid": "string"
      }
    ],
    "local": {
      "description": "string",
      "name": "string"
    },
    "remote": {
      "description": "string",
      "name": "string"
    }
  },
  "s3_bucket": {
    "application_components": [
      {
        "access_policies": [
          {
            "actions": [
              "string"
            ],
            "conditions": [
              {
                "delimiters": [
                  "string"
                ],
                "max_keys": [
                  "integer"
                ],
                "operator": "string",
                "prefixes": [
                  "string"
                ],
                "source_ips": [
```

```
                "string"
              ],
              "usernames": [
                "string"
              ]
            }
          ],
          "effect": "string",
          "principals": [
            "string"
          ],
          "resources": [
            "string"
          ],
          "sid": "string"
        }
      ],
      "bucket_endpoint_type": "string",
      "comment": "string",
      "default_retention_period": "string",
      "exclude_aggregates": [
        {
          "name": "string",
          "uuid": "string"
        }
      ],
      "name": "string",
      "nas_path": "string",
      "qos": {
        "policy": {
          "name": "string",
          "uuid": "string"
        }
      },
      "retention_mode": "string",
      "snapshot_policy": {
        "name": "string",
        "uuid": "string"
      },
      "storage_service": {
        "name": "string"
      },
      "uuid": "string",
      "versioning_state": "string"
    }
  ],
```

```
      "protection_type": {
        "remote_rpo": "string"
      }
    },
    "san": {
      "application_components": [
        {
          "igroup_name": "string",
          "name": "string",
          "os_type": "string",
          "qos": {
            "policy": {
              "name": "string",
              "uuid": "string"
            }
          },
          "storage_service": {
            "name": "string"
          },
          "tiering": {
            "control": "string",
            "object_stores": [
              {
                "name": "string"
              }
            ],
            "policy": "string"
          }
        }
      ],
      "exclude_aggregates": [
        {
          "name": "string",
          "uuid": "string"
        }
      ],
      "new_igroups": [
        {
          "comment": "string",
          "igroups": [
            {
              "name": "string",
              "uuid": "string"
            }
          ],
          "initiator_objects": [
```

```
          {
            "comment": "string",
            "name": "string"
          }
        ],
        "initiators": [
          "string"
        ],
        "name": "string",
        "os_type": "string",
        "protocol": "string"
      }
    ],
    "os_type": "string",
    "protection_type": {
      "local_policy": "string",
      "local_rpo": "string",
      "remote_rpo": "string"
    }
  },
  "state": "string",
  "statistics": {
    "components": [
      {
        "iops": {
          "per_tb": 0,
          "total": 0
        },
        "latency": {
          "average": 0,
          "raw": 0
        },
        "name": "string",
        "snapshot": {
          "reserve": 0,
          "used": 0
        },
        "space": {
          "available": 0,
          "logical_used": 0,
          "provisioned": 0,
          "reserved_unused": 0,
          "savings": 0,
          "used": 0,
          "used_excluding_reserves": 0,
          "used_percent": 0
```

```
        },
        "storage_service": {
          "name": "string",
          "uuid": "string"
        },
        "uuid": "string"
      }
    ],
    "iops": {
      "per_tb": 0,
      "total": 0
    },
    "latency": {
      "average": 0,
      "raw": 0
    },
    "snapshot": {
      "reserve": 0,
      "used": 0
    },
    "space": {
      "available": 0,
      "logical_used": 0,
      "provisioned": 0,
      "reserved_unused": 0,
      "savings": 0,
      "used": 0,
      "used_excluding_reserves": 0,
      "used_percent": 0
    }
  },
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "template": {
    "name": "string",
    "protocol": "string",
    "version": 0
  },
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65995775	The size provided is too small.
65995776	The size provided is too large.
92406300	The "-capacity-tier" parameter cannot be set to "true" because tiering is not supported on the platform.
92406301	The "-storage_service" parameter cannot be specified because it is not supported on the platform."

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
element_count	integer	The number of storage elements (LUNs for SAN) of the database to maintain. Must be an even number between 2 and 16. Odd numbers will be rounded up to the next even number within range.
replication_factor	integer	The number of data bearing members of the replicaset, including 1 primary and at least 1 secondary.
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

Name	Type	Description
name	string	The name of an igroup to nest within a parent igroup. Mutually exclusive with initiators and initiator_objects.
uuid	string	The UUID of an igroup to nest within a parent igroup Usage: <UUID>

initiator_objects

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	The WWPN, IQN, or Alias of the initiator. Mutually exclusive with nested igroups and the initiators array.

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
new_igroups	array[mongo_db_on_san_new_igroups]	The list of initiator groups to create.
os_type	string	The name of the host OS running the application.
primary_igroup_name	string	The initiator group for the primary.
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

Name	Type	Description
id	integer	The ID of an existing NFS export policy.
name	string	The name of an existing NFS export policy.

component

Name	Type	Description
name	string	Name of the source component.

svm

Name	Type	Description
name	string	Name of the source SVM.

origin

Name	Type	Description
component	component	
svm	svm	

flexcache

Name	Type	Description
dr_cache	boolean	Dr-cache is a FlexCache volume create time option that has the same flexgroup-msid as that of the origin of a FlexCache volume. By default, dr-cache is disabled. The flexgroup-msid of the FlexCache volume does not need to be same as that of the origin of a FlexCache volume.
origin	origin	

policy

Name	Type	Description
name	string	The name of an existing QoS policy.
uuid	string	The UUID of an existing QoS policy. Usage: <UUID>

qos

Name	Type	Description
policy	policy	

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as quot;Plt;num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".
retention	retention	
snaplock_type	string	The SnapLock type of the smart container.

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

Name	Type	Description
name	string	The name of the object-store to use.

nas_application_components_tiering

application-components.tiering

Name	Type	Description
control	string	Storage tiering placement rules for the container(s)
object_stores	array[object_stores]	
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
export_policy	export_policy	
flexcache	flexcache	
name	string	The name of the application component.
qos	qos	
scale_out	boolean	Denotes a Flexgroup.
share_count	integer	The number of shares in the application component.
snaplock	snaplock	
snapshot_locking_enabled	boolean	Indicates whether Snapshot copy locking is enabled on the volume.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
access	string	The CIFS access granted to the user or group.
user_or_group	string	The name of the CIFS user or group that will be granted access.

exclude_aggregates

Name	Type	Description
name	string	The name of the aggregate to exclude. Usage: <aggregate name>
uuid	string	The ID of the aggregate to exclude. Usage: <UUID>

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

Name	Type	Description
access	string	The NFS access granted.
host	string	The name of the NFS entity granted access.

protection_type

Name	Type	Description
local_policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
cifs_access	array[app_cifs_access]	The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.
cifs_share_name	string	The name of the CIFS share. Usage: <Share>
exclude_aggregates	array[exclude_aggregates]	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
controller_secret_key	string	Authentication Controller Secret.
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.
host_secret_key	string	Authentication Host Secret.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

Name	Type	Description
control	string	Storage tiering placement rules for the container(s)
object_stores	array[object_stores]	
policy	string	The storage tiering type of the application component.

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.

Name	Type	Description
os_type	string	The name of the host OS running the application.
performance	performance	
qos	qos	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.
policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>

remote

Name	Type	Description
name	string	The remote RPO of the application.

rpo

Name	Type	Description
local	local	
remote	remote	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
os_type	string	The name of the host OS running the application.
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}

Name	Type	Description
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
mirrored	boolean	Specifies whether the redo log group should be mirrored.
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.

Name	Type	Description
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[oracle_on_san_new_igroups]	The list of initiator groups to create.
ora_home	ora_home	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
copies	integer	The number of CRS volumes.
size	integer	The size of the Oracle CRS/voting storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	

Name	Type	Description
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
new_igroups	array[oracle_rac_on_san_new_igroups]	The list of initiator groups to create.
ora_home	ora_home	
oracle_crs	oracle_crs	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the component. This indicates how often component Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

components

Name	Type	Description
name	string	Component Name.
rpo	rpo	
uuid	string	Component UUID.

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the application. This indicates how often application Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the application. A remote RPO of zero indicates that the application is synchronously replicated to another cluster.

rpo

Name	Type	Description
components	array[components]	
is_supported	boolean	Is RPO supported for this application? Generation 1 applications did not support Snapshot copies or MetroCluster.
local	local	
remote	remote	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
operator	string	Policy Condition Operator.
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
conditions	array[zapp_s3_bucket_application_components_access_policies_conditions]	conditions.
effect	string	Allow or Deny Access.
principals	array[string]	
resources	array[string]	
sid	string	Statement Identifier Usage: <(size 1..256)>

snapshot_policy

Name	Type	Description
name	string	The name of the snapshot policy that is used for the S3 bucket.
uuid	string	The UUID of the snapshot policy that is used for the S3 bucket. Usage: <UUID>

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
access_policies	array[zapp_s3_bucket_application_components_access_policies]	The list of S3 objectstore policies to be created.
bucket_endpoint_type	string	The type of bucket.
capacity_tier	boolean	Prefer lower latency storage under similar media costs.
comment	string	Object Store Server Bucket Description Usage: <(size 1..256)>
default_retention_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as quot;Plt;num>Y" and quot;Plt;num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported. Usage: {{<integer> days|years} | none}
exclude_aggregates	array[exclude_aggregates]	
name	string	The name of the application component.
nas_path	string	The path to which the bucket corresponds to.
qos	qos	

Name	Type	Description
retention_mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking. For s3 type buckets, the default value is no_lock.
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
snapshot_policy	snapshot_policy	
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>
versioning_state	string	Bucket Versioning State. For nas type buckets, this field is not set. For s3 type buckets, the default value is disabled.

protection_type

Name	Type	Description
remote_rpo	string	The remote RPO of the application.

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.
protection_type	protection_type	

san_application_components_tiering

application-components.tiering

Name	Type	Description
control	string	Storage tiering placement rules for the container(s)
object_stores	array[object_stores]	
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
qos	qos	
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
exclude_aggregates	array[exclude_aggregates]	
new_igroups	array[san_new_igroups]	The list of initiator groups to create.
os_type	string	The name of the host OS running the application.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}

Name	Type	Description
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
new_igroups	array[sql_on_san_new_igroups]	The list of initiator groups to create.
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

access

Name	Type	Description
installer	string	SQL installer admin user name.

Name	Type	Description
service_account	string	SQL service account user name.

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
access	access	
db	db	
log	log	
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application component.
total	integer	The total number of IOPS being used by the application component.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this component.
raw	integer	The cumulative response time in microseconds for this component.

snapshot

Name	Type	Description
reserve	integer	The amount of space reserved by the system for Snapshot copies.
used	integer	The amount of spacing currently in use by the system to store Snapshot copies.

space

Name	Type	Description
available	integer	The available amount of space left in the application component. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application component.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.

Name	Type	Description
used	integer	The amount of space that is currently being used by the application component. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application component.

storage_service

Name	Type	Description
name	string	The storage service name. AFF systems support the extreme storage service. All other systems only support value.
uuid	string	The storage service UUID.

components

Name	Type	Description
iops	iops	
latency	latency	
name	string	Component Name.
shared_storage_pool	boolean	An application component is considered to use a shared storage pool if storage elements for for other components reside on the same aggregate as storage elements for this component.
snapshot	snapshot	
space	space	

Name	Type	Description
statistics_incomplete	boolean	If not all storage elements of the application component are currently available, the returned statistics might only include data from those elements that were available.
storage_service	storage_service	
uuid	string	Component UUID.

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application.
total	integer	The total number of IOPS being used by the application.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this application.
raw	integer	The cumulative response time in microseconds for this application.

space

Name	Type	Description
available	integer	The available amount of space left in the application. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.
used	integer	The amount of space that is currently being used by the application. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.

Name	Type	Description
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application.

statistics

Name	Type	Description
components	array[components]	
iops	iops	
latency	latency	
shared_storage_pool	boolean	An application is considered to use a shared storage pool if storage elements for multiple components reside on the same aggregate.
snapshot	snapshot	
space	space	
statistics_incomplete	boolean	If not all storage elements of the application are currently available, the returned statistics might only include data from those elements that were available.

svm

Name	Type	Description
name	string	SVM Name. Either the SVM name or UUID must be provided to create an application.
uuid	string	SVM UUID. Either the SVM name or UUID must be provided to create an application.

self_link

template

Name	Type	Description
name	string	The name of the template that was used to provision this application.
protocol	string	The protocol access of the template that was used to provision this application.
version	integer	The version of the template that was used to provision this application. The template version changes only if the layout of the application changes over time. For example, redo logs in Oracle RAC templates were updated and provisioned differently in DATA ONTAP 9.3.0 compared to prior releases, so the version number was increased. If layouts change in the future, the changes will be documented along with the corresponding version numbers. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
size	integer	The size of the desktops. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

hyper_v_access

Name	Type	Description
service_account	string	Hyper-V service account.

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
protocol	string	The protocol of the new initiator group.

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
hypervisor	string	The name of the hypervisor hosting the application.

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[vdi_on_san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
size	integer	The size of the datastore. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
protocol	string	The protocol of the new initiator group.

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[vsi_on_san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	

application

Applications

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.
delete_data	boolean	Should application storage elements be deleted? An application is considered to use storage elements from a shared storage pool. Possible values are 'true' and 'false'. If the value is 'true', the application will be deleted in its entirety. If the value is 'false', the storage elements will be disassociated from the application and preserved. The application will then be deleted.
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Application Name. This field is user supplied when the application is created.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.

Name	Type	Description
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
smart_container	boolean	Identifies if this is a smart container or not.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
svm	svm	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.

Name	Type	Description
vsi_on_san	vsi_on_san	A VSI application using SAN.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve application components

GET `/application/applications/{application.uuid}/components`

Introduced In: 9.6

Retrieves application components.

Overview

The application component object exposes how to access an application. Most application interfaces abstract away the underlying ONTAP storage elements, but this interface exposes what is necessary to connect to and uses the storage that is provisioned for an application. See the application component model for a detailed description of each property.

Query examples

Queries are limited on this API. Most of the details are nested under the `nfs_access`, `cifs_access`, or `san_access` properties, but those properties do not support queries, and properties nested under those properties cannot be requested individually in the current release.

The following query returns all application components with names beginning in *secondary*.

```
GET
/application/applications/{application.uuid}/components?name=secondary*
```

The following query returns all application components at the *extreme* storage service.

```
GET
/application/applications/{application.uuid}/components?storage_service.na
me=extreme
```

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	query	False	Filter by UUID
name	string	query	False	Filter by name
storage_service.name	string	query	False	Filter by storage_service.name
storage_service.uuid	string	query	False	Filter by storage_service.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[application_component]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "string"
      },
      "backing_storage": {
        "luns": [
          {
            "creation_timestamp": "string",
            "path": "string",
            "size": 0,
            "uuid": "string"
          }
        ],
        "namespaces": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "creation_timestamp": "string",
            "name": "string",
```

```
            "size": 0,
            "uuid": "string"
          }
        ],
        "volumes": [
          {
            "creation_timestamp": "string",
            "name": "string",
            "size": 0,
            "uuid": "string"
          }
        ]
      },
      "cifs_access": [
        {
          "backing_storage": {
            "type": "string",
            "uuid": "string"
          },
          "ips": [
            "string"
          ],
          "path": "string",
          "permissions": [
            {
              "access": "string",
              "user_or_group": "string"
            }
          ],
          "server": {
            "name": "string"
          },
          "share": {
            "name": "string"
          }
        }
      ],
      "file_system": "string",
      "host_management_url": "string",
      "host_name": "string",
      "name": "string",
      "nfs_access": [
        {
          "backing_storage": {
            "type": "string",
            "uuid": "string"
```

```
          },
          "export_policy": {
            "name": "string"
          },
          "ips": [
            "string"
          ],
          "path": "string",
          "permissions": [
            {
              "access": "string",
              "host": "string"
            }
          ]
        }
      ],
      "nvme_access": [
        {
          "backing_storage": {
            "type": "string",
            "uuid": "string"
          },
          "subsystem_map": {
            "anagrpid": "string",
            "nsid": "string",
            "subsystem": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "hosts": [
                {
                  "_links": {
                    "self": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    }
                  },
                  "nqn": "string"
                }
              ],
              "name": "string",
              "uuid": "string"
            }
```

```
          }
        }
      ],
      "protection_groups": [
        {
          "name": "string",
          "rpo": {
            "local": {
              "description": "string",
              "name": "string"
            },
            "remote": {
              "description": "string",
              "name": "string"
            }
          },
          "uuid": "string"
        }
      ],
      "san_access": [
        {
          "backing_storage": {
            "type": "string",
            "uuid": "string"
          },
          "lun_mappings": [
            {
              "fcp": [
                {
                  "interface": {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "name": "fc_lif1",
                    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                    "wwpn": "20:00:00:50:56:b4:13:a8"
                  }
                }
              ],
              "igroup": {
                "initiators": [
                  "string"
                ],
                "name": "string",
```

```
                "uuid": "string"
              },
              "iscsi": [
                {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "interface": {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "ip": {
                      "address": "10.10.10.7"
                    },
                    "name": "lif1",
                    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                  },
                  "port": 3260
                }
              ],
              "lun_id": 0
            }
          ],
          "serial_number": "string"
        }
      ],
      "storage_service": {
        "name": "string",
        "uuid": "string"
      },
      "svm": {
        "name": "string",
        "uuid": "string"
      },
      "uuid": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application name
uuid	string	The application UUID. Valid in URL.

application_lun_object

LUN object

Name	Type	Description
creation_timestamp	string	LUN creation time
path	string	LUN path
size	integer	LUN size
uuid	string	LUN UUID

application_namespace_object

Namespace object

Name	Type	Description
_links	_links	
creation_timestamp	string	Namespace creation time
name	string	Namespace name
size	integer	Namespace size
uuid	string	Namespace UUID

application_volume_object

Volume object

Name	Type	Description
creation_timestamp	string	Creation time
name	string	Name
size	integer	Size
uuid	string	UUID

application_backing_storage

Name	Type	Description
luns	array[application_lun_object]	
namespaces	array[application_namespace_object]	
volumes	array[application_volume_object]	

backing_storage

Name	Type	Description
type	string	Backing storage type
uuid	string	Backing storage UUID

permissions

Name	Type	Description
access	string	Access granted to the user or group
user_or_group	string	User or group

server

Name	Type	Description
name	string	Server name

share

Name	Type	Description
name	string	Share name

application_cifs_properties

Name	Type	Description
backing_storage	backing_storage	
ips	array[string]	
path	string	Junction path
permissions	array[permissions]	
server	server	
share	share	

export_policy

Name	Type	Description
name	string	Export policy name

permissions

Name	Type	Description
access	string	Access granted to the host
host	string	Host granted access

application_nfs_properties

Name	Type	Description
backing_storage	backing_storage	
export_policy	export_policy	
ips	array[string]	
path	string	Junction path
permissions	array[permissions]	

self

Name	Type	Description
self	href	

_links

Name	Type	Description
self	self	

hosts

Name	Type	Description
_links	_links	
nqn	string	Host

subsystem

Name	Type	Description
_links	_links	
hosts	array[hosts]	
name	string	Subsystem name
uuid	string	Subsystem UUID

subsystem_map

Subsystem map object

Name	Type	Description
anagrpid	string	Subsystem ANA group ID
nsid	string	Subsystem namespace ID

Name	Type	Description
subsystem	subsystem	

application_nvme_access

Application NVME access

Name	Type	Description
backing_storage	backing_storage	
is_clone	boolean	Clone
subsystem_map	subsystem_map	Subsystem map object

local

Name	Type	Description
description	string	A detailed description of the local RPO. This includes details on the snapshot schedule.
name	string	The local RPO of the component. This indicates how often component snapshots are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

rpo

Name	Type	Description
local	local	
remote	remote	

application_protection_groups

Name	Type	Description
name	string	Protection group name
rpo	rpo	
uuid	string	Protection group UUID

fc_interface_reference

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

application_san_access_fcp_endpoint

A Fibre Channel Protocol (FCP) access endpoint for the LUN.

Name	Type	Description
interface	fc_interface_reference	An FC interface.

igroup

Name	Type	Description
initiators	array[string]	
name	string	Igroup name
uuid	string	Igroup UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

application_san_access_iscsi_endpoint

An iSCSI access endpoint for the LUN.

Name	Type	Description
_links	_links	
interface	interface	A network interface. Either UUID or name may be supplied on input.
port	integer	The TCP port number of the iSCSI access endpoint.

application_lun_mapping_object

Name	Type	Description
fcp	array[application_san_access_fcp_endpoint]	All possible Fibre Channel Protocol (FCP) access endpoints for the LUN.
igroup	igroup	
iscsi	array[application_san_access_iscsi_endpoint]	All possible iSCSI access endpoints for the LUN.
lun_id	integer	LUN ID

application_san_access

Name	Type	Description
backing_storage	backing_storage	
is_clone	boolean	Clone
lun_mappings	array[application_lun_mapping_object]	
serial_number	string	LUN serial number

storage_service

Name	Type	Description
name	string	Storage service name
uuid	string	Storage service UUID

svm

Name	Type	Description
name	string	SVM name
uuid	string	SVM UUID

application_component

Application component

Name	Type	Description
_links	_links	
application	application	
backing_storage	application_backing_storage	
cifs_access	array[application_cifs_properties]	
file_system	string	Defines the type of file system that will be installed on this application component.
host_management_url	string	Host management URL
host_name	string	L2 Host FQDN
name	string	Application component name

Name	Type	Description
nfs_access	array[application_nfs_properties]	
nvme_access	array[application_nvme_access]	
protection_groups	array[application_protection_groups]	
san_access	array[application_san_access]	
storage_service	storage_service	
svm	svm	
uuid	string	The application component UUID. Valid in URL.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve application component snapshots

GET `/application/applications/{application.uuid}/components/{component.uuid}/snapshots`

Introduced In: 9.6

Retrieves snapshots of an application component.

This endpoint is only supported for Maxdata template applications.

Component snapshots are essentially more granular application snapshots. There is no difference beyond the

scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- GET /application/applications/{uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
component.uuid	string	path	True	Application Component UUID
component.name	string	query	False	Filter by Application Component Name
uuid	string	query	False	Filter by uuid
name	string	query	False	Filter by name
consistency_type	string	query	False	Filter by consistency_type
comment	string	query	False	Filter by comment
create_time	string	query	False	Filter by create_time
is_partial	string	query	False	Filter by is_partial
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[application_component_snapshot]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "string"
      },
      "comment": "string",
      "component": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "string"
      },
      "consistency_type": "string",
      "create_time": "string",
      "name": "string",
      "svm": {
        "name": "string",
        "uuid": "string"
      },
      "uuid": "string"
```

```
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application Name
uuid	string	Application UUID. Valid in URL

component

Name	Type	Description
_links	_links	
name	string	Component Name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM Name
uuid	string	SVM UUID

application_component_snapshot

Name	Type	Description
_links	_links	
application	application	
comment	string	Comment. Valid in POST
component	component	
consistency_type	string	Consistency Type. This is for categorization only. A snapshot should not be set to application consistent unless the host application is quiesced for the snapshot. Valid in POST
create_time	string	Creation Time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	Snapshot name. Valid in POST
svm	svm	
uuid	string	Snapshot UUID. Valid in URL

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an application component snapshot

POST
`/application/applications/{application.uuid}/components/{component.uuid}/snapshots`

Introduced In: 9.6

Creates a snapshot of an application component.

This endpoint is only supported for Maxdata template applications.

Required properties

- `name`

Recommended optional properties

- `consistency_type` - Track whether this snapshot is *application* or *crash* consistent.
  Component snapshots are essentially more granular application snapshots. There is no difference beyond the scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- GET /application/applications/{uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
component.uuid	string	path	True	Application Component UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
application	application	
comment	string	Comment. Valid in POST
component	component	

Name	Type	Description
consistency_type	string	Consistency Type. This is for categorization only. A snapshot should not be set to application consistent unless the host application is quiesced for the snapshot. Valid in POST
create_time	string	Creation Time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	Snapshot name. Valid in POST
svm	svm	
uuid	string	Snapshot UUID. Valid in URL

Example request

```
{
  "application": {
    "name": "string",
    "uuid": "string"
  },
  "comment": "string",
  "component": {
    "name": "string",
    "uuid": "string"
  },
  "consistency_type": "string",
  "create_time": "string",
  "name": "string",
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

application

Name	Type	Description
name	string	Application Name
uuid	string	Application UUID. Valid in URL

component

Name	Type	Description
name	string	Component Name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM Name
uuid	string	SVM UUID

application_component_snapshot

Name	Type	Description
application	application	
comment	string	Comment. Valid in POST
component	component	
consistency_type	string	Consistency Type. This is for categorization only. A snapshot should not be set to application consistent unless the host application is quiesced for the snapshot. Valid in POST

Name	Type	Description
create_time	string	Creation Time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	Snapshot name. Valid in POST
svm	svm	
uuid	string	Snapshot UUID. Valid in URL

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an application component snapshot

DELETE

`/application/applications/{application.uuid}/components/{component.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Delete a snapshot of an application component.

This endpoint is only supported for Maxdata template applications.

Component snapshots are essentially more granular application snapshots. There is no difference beyond the scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- DELETE /application/applications/{uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
component.uuid	string	path	True	Application Component UUID
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a snapshot for a specific application component

GET `/application/applications/{application.uuid}/components/{component.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Retrieve a snapshot of an application component.

This endpoint is only supported for Maxdata template applications.

Component snapshots are essentially more granular application snapshots. There is no difference beyond the scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- GET /application/applications/{uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
component.uuid	string	path	True	Application Component UUID
uuid	string	path	True	Snapshot UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
application	application	
comment	string	Comment. Valid in POST
component	component	

Name	Type	Description
consistency_type	string	Consistency Type. This is for categorization only. A snapshot should not be set to application consistent unless the host application is quiesced for the snapshot. Valid in POST
create_time	string	Creation Time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	Snapshot name. Valid in POST
svm	svm	
uuid	string	Snapshot UUID. Valid in URL

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "string"
  },
  "comment": "string",
  "component": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "string"
  },
  "consistency_type": "string",
  "create_time": "string",
  "name": "string",
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "uuid": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application Name
uuid	string	Application UUID. Valid in URL

component

Name	Type	Description
_links	_links	
name	string	Component Name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM Name
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Restore an application component snapshot

POST
`/application/applications/{application.uuid}/components/{component.uuid}/snapshots/{uuid}/restore`

Introduced In: 9.6

Restore a snapshot of an application component.

This endpoint is only supported for Maxdata template applications.

Component snapshots are essentially more granular application snapshots. There is no difference beyond the scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- POST /application/applications/{application.uuid}/snapshots/{uuid}/restore
- DOC /application
- Asynchronous operations

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
component.uuid	string	path	True	Application Component UUID
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an application component

GET `/application/applications/{application.uuid}/components/{uuid}`

Introduced In: 9.6

Retrieves an application component.

Overview

The application component object exposes how to access an application. Most application interfaces abstract away the underlying ONTAP storage elements, but this interface exposes what is necessary to connect to and uses the storage that is provisioned for an application. See the application component model for a detailed description of each property.

Access

Each application component can be accessed via NFS, CIFS, or SAN. NFS and CIFS access can be enabled simultaneously. Each access section includes a `backing_storage` property. This property is used to correlate the storage elements with the access elements of the application. The `backing_storage` portion of the access section provides the `type` and `uuid` of the backing storage. There is another `backing_storage` property at the same level as the access properties which contains lists of backing storage elements corresponding to the types listed in the access section.

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	path	True	Application component UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
application	application	
backing_storage	application_backing_storage	
cifs_access	array[application_cifs_properties]	
file_system	string	Defines the type of file system that will be installed on this application component.
host_management_url	string	Host management URL

Name	Type	Description
host_name	string	L2 Host FQDN
name	string	Application component name
nfs_access	array[application_nfs_properties]	
nvme_access	array[application_nvme_access]	
protection_groups	array[application_protection_groups]	
san_access	array[application_san_access]	
storage_service	storage_service	
svm	svm	
uuid	string	The application component UUID. Valid in URL.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "string"
  },
  "backing_storage": {
    "luns": [
      {
        "creation_timestamp": "string",
        "path": "string",
        "size": 0,
        "uuid": "string"
      }
    ],
    "namespaces": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "creation_timestamp": "string",
        "name": "string",
        "size": 0,
        "uuid": "string"
      }
    ],
    "volumes": [
      {
        "creation_timestamp": "string",
        "name": "string",
        "size": 0,
        "uuid": "string"
      }
```

```
      ]
    },
    "cifs_access": [
      {
        "backing_storage": {
          "type": "string",
          "uuid": "string"
        },
        "ips": [
          "string"
        ],
        "path": "string",
        "permissions": [
          {
            "access": "string",
            "user_or_group": "string"
          }
        ],
        "server": {
          "name": "string"
        },
        "share": {
          "name": "string"
        }
      }
    ],
    "file_system": "string",
    "host_management_url": "string",
    "host_name": "string",
    "name": "string",
    "nfs_access": [
      {
        "backing_storage": {
          "type": "string",
          "uuid": "string"
        },
        "export_policy": {
          "name": "string"
        },
        "ips": [
          "string"
        ],
        "path": "string",
        "permissions": [
          {
            "access": "string",
```

```
          "host": "string"
        }
      ]
    }
  ],
  "nvme_access": [
    {
      "backing_storage": {
        "type": "string",
        "uuid": "string"
      },
      "subsystem_map": {
        "anagrpid": "string",
        "nsid": "string",
        "subsystem": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "hosts": [
            {
              "_links": {
                "self": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                }
              },
              "nqn": "string"
            }
          ],
          "name": "string",
          "uuid": "string"
        }
      }
    }
  ],
  "protection_groups": [
    {
      "name": "string",
      "rpo": {
        "local": {
          "description": "string",
          "name": "string"
        },
```

```
        "remote": {
          "description": "string",
          "name": "string"
        }
      },
      "uuid": "string"
    }
  ],
  "san_access": [
    {
      "backing_storage": {
        "type": "string",
        "uuid": "string"
      },
      "lun_mappings": [
        {
          "fcp": [
            {
              "interface": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "fc_lif1",
                "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                "wwpn": "20:00:00:50:56:b4:13:a8"
              }
            }
          ],
          "igroup": {
            "initiators": [
              "string"
            ],
            "name": "string",
            "uuid": "string"
          },
          "iscsi": [
            {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "interface": {
                "_links": {
```

```
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "ip": {
                    "address": "10.10.10.7"
                  },
                  "name": "lif1",
                  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                },
                "port": 3260
              }
            ],
            "lun_id": 0
          }
        ],
        "serial_number": "string"
      }
    ],
    "storage_service": {
      "name": "string",
      "uuid": "string"
    },
    "svm": {
      "name": "string",
      "uuid": "string"
    },
    "uuid": "string"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application name
uuid	string	The application UUID. Valid in URL.

application_lun_object

LUN object

Name	Type	Description
creation_timestamp	string	LUN creation time
path	string	LUN path
size	integer	LUN size
uuid	string	LUN UUID

application_namespace_object

Namespace object

Name	Type	Description
_links	_links	
creation_timestamp	string	Namespace creation time
name	string	Namespace name

Name	Type	Description
size	integer	Namespace size
uuid	string	Namespace UUID

application_volume_object

Volume object

Name	Type	Description
creation_timestamp	string	Creation time
name	string	Name
size	integer	Size
uuid	string	UUID

application_backing_storage

Name	Type	Description
luns	array[application_lun_object]	
namespaces	array[application_namespace_object]	
volumes	array[application_volume_object]	

backing_storage

Name	Type	Description
type	string	Backing storage type
uuid	string	Backing storage UUID

permissions

Name	Type	Description
access	string	Access granted to the user or group
user_or_group	string	User or group

server

Name	Type	Description
name	string	Server name

share

Name	Type	Description
name	string	Share name

application_cifs_properties

Name	Type	Description
backing_storage	backing_storage	
ips	array[string]	
path	string	Junction path
permissions	array[permissions]	
server	server	
share	share	

export_policy

Name	Type	Description
name	string	Export policy name

permissions

Name	Type	Description
access	string	Access granted to the host
host	string	Host granted access

application_nfs_properties

Name	Type	Description
backing_storage	backing_storage	
export_policy	export_policy	
ips	array[string]	
path	string	Junction path

Name	Type	Description
permissions	array[permissions]	

self

Name	Type	Description
self	href	

_links

Name	Type	Description
self	self	

hosts

Name	Type	Description
_links	_links	
nqn	string	Host

subsystem

Name	Type	Description
_links	_links	
hosts	array[hosts]	
name	string	Subsystem name
uuid	string	Subsystem UUID

subsystem_map

Subsystem map object

Name	Type	Description
anagrpid	string	Subsystem ANA group ID
nsid	string	Subsystem namespace ID
subsystem	subsystem	

application_nvme_access

Application NVME access

Name	Type	Description
backing_storage	backing_storage	
is_clone	boolean	Clone
subsystem_map	subsystem_map	Subsystem map object

local

Name	Type	Description
description	string	A detailed description of the local RPO. This includes details on the snapshot schedule.
name	string	The local RPO of the component. This indicates how often component snapshots are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

rpo

Name	Type	Description
local	local	
remote	remote	

application_protection_groups

Name	Type	Description
name	string	Protection group name
rpo	rpo	

Name	Type	Description
uuid	string	Protection group UUID

fc_interface_reference

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

application_san_access_fcp_endpoint

A Fibre Channel Protocol (FCP) access endpoint for the LUN.

Name	Type	Description
interface	fc_interface_reference	An FC interface.

igroup

Name	Type	Description
initiators	array[string]	
name	string	Igroup name
uuid	string	Igroup UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

application_san_access_iscsi_endpoint

An iSCSI access endpoint for the LUN.

Name	Type	Description
_links	_links	
interface	interface	A network interface. Either UUID or name may be supplied on input.
port	integer	The TCP port number of the iSCSI access endpoint.

application_lun_mapping_object

Name	Type	Description
fcp	array[application_san_access_fcp_endpoint]	All possible Fibre Channel Protocol (FCP) access endpoints for the LUN.
igroup	igroup	
iscsi	array[application_san_access_iscsi_endpoint]	All possible iSCSI access endpoints for the LUN.
lun_id	integer	LUN ID

application_san_access

Name	Type	Description
backing_storage	backing_storage	

Name	Type	Description
is_clone	boolean	Clone
lun_mappings	array[application_lun_mapping_object]	
serial_number	string	LUN serial number

storage_service

Name	Type	Description
name	string	Storage service name
uuid	string	Storage service UUID

svm

Name	Type	Description
name	string	SVM name
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage application snapshots

Application applications application.uuid snapshots endpoint overview

Overview

Applications support snapshots across all member storage elements. These snapshots can be created and restored at any time or as scheduled. Most applications have hourly snapshots enabled by default, unless the RPO setting is overridden during the creation of the application. An application snapshot can be flagged as either *application consistent*, or *crash consistent*. From an ONTAP perspective, there is no difference between these two consistency types. These types are available for record keeping so that snapshots taken after the application is quiesced (application consistent) can be tracked separately from those snapshots taken without first quiescing the application (crash consistent). By default, all application snapshots are flagged to be *crash consistent*, and snapshots taken at a scheduled time are also considered *crash consistent*.

The functionality provided by these APIs is not integrated with the host application. Snapshots have limited value without host coordination, so the use of the SnapCenter Backup Management suite is recommended to ensure correct interaction between host applications and ONTAP.

Retrieve an application snapshot

GET `/application/applications/{application.uuid}/snapshots`

Introduced In: 9.6

Retrieves snapshots of an application.

Query examples

The following query returns all snapshots from May 4, 2017 EST. For readability, the colon (`:`) is left in this example. For an actual call, they should be escaped as `%3A`.

```
GET
/application/applications/{application.uuid}/snapshots?create_time=2017-
05-04T00:00:00-05:00..2017-05-04T23:59:59-05:00
```

The following query returns all snapshots that have been flagged as *application consistent*.

```
GET
/application/applications/{application.uuid}/snapshots?consistency_type=ap
plication
```

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	query	False	Filter by UUID
name	string	query	False	Filter by name
consistency_type	string	query	False	Filter by consistency_type
components.name	string	query	False	Filter by components.name
components.uuid	string	query	False	Filter by components.uuid
comment	string	query	False	Filter by comment
create_time	string	query	False	Filter by create_time
is_partial	string	query	False	Filter by is_partial
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[application_snapshot]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "string"
      },
      "comment": "string",
      "components": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string",
          "uuid": "string"
        }
      ],
      "consistency_type": "string",
      "create_time": "string",
      "name": "string",
      "svm": {
        "name": "string",
        "uuid": "string"
```

```
        },
        "uuid": "string"
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application name
uuid	string	The application UUID. Valid in URL.

components

Name	Type	Description
_links	_links	
name	string	Component name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM name
uuid	string	SVM UUID

application_snapshot

Name	Type	Description
_links	_links	
application	application	
comment	string	Comment. Valid in POST.
components	array[components]	
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Creation time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	The snapshot name. Valid in POST.
svm	svm	
uuid	string	The snapshot UUID. Valid in URL.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Create an application snapshot

POST `/application/applications/{application.uuid}/snapshots`

Introduced In: 9.6

Creates a snapshot of the application.

Required properties

- `name`

Recommended optional properties

- `consistency_type` - Track whether this snapshot is *application* or *crash* consistent.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
application	application	
comment	string	Comment. Valid in POST.
components	array[components]	

Name	Type	Description
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Creation time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	The snapshot name. Valid in POST.
svm	svm	
uuid	string	The snapshot UUID. Valid in URL.

Example request

```
{
  "application": {
    "name": "string",
    "uuid": "string"
  },
  "comment": "string",
  "components": [
    {
      "name": "string",
      "uuid": "string"
    }
  ],
  "consistency_type": "string",
  "create_time": "string",
  "name": "string",
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

application

Name	Type	Description
name	string	Application name
uuid	string	The application UUID. Valid in URL.

components

Name	Type	Description
name	string	Component name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM name
uuid	string	SVM UUID

application_snapshot

Name	Type	Description
application	application	
comment	string	Comment. Valid in POST.
components	array[components]	

Name	Type	Description
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Creation time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	The snapshot name. Valid in POST.
svm	svm	
uuid	string	The snapshot UUID. Valid in URL.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete an application snapshot

DELETE `/application/applications/{application.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Delete a snapshot of an application

Query examples

Individual snapshots can be destroyed with no query parameters, or a range of snapshots can be destroyed at one time using a query.

The following query deletes all application snapshots created before May 4, 2017

```
DELETE
/application/applications/{application.uuid}/snapshots?create_time=<2017-
05-04T00:00:00-05:00
```

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an application snapshot

GET `/application/applications/{application.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Retrieve a snapshot of an application component.

This endpoint is only supported for Maxdata template applications.

Component snapshots are essentially more granular application snapshots. There is no difference beyond the scope of the operation.

Learn more

- DOC /application/applications/{application.uuid}/snapshots
- GET /application/applications/{uuid}/snapshots
- DOC /application

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	path	True	Snapshot UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
application	application	
comment	string	Comment. Valid in POST.
components	array[components]	
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.

Name	Type	Description
create_time	string	Creation time
is_partial	boolean	A partial snapshot means that not all volumes in an application component were included in the snapshot.
name	string	The snapshot name. Valid in POST.
svm	svm	
uuid	string	The snapshot UUID. Valid in URL.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "string"
  },
  "comment": "string",
  "components": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "uuid": "string"
    }
  ],
  "consistency_type": "string",
  "create_time": "string",
  "name": "string",
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

application

Name	Type	Description
_links	_links	
name	string	Application name
uuid	string	The application UUID. Valid in URL.

components

Name	Type	Description
_links	_links	
name	string	Component name
uuid	string	Component UUID

svm

Name	Type	Description
name	string	SVM name
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Restore an application snapshot

POST `/application/applications/{application.uuid}/snapshots/{uuid}/restore`

Introduced In: 9.6

Restore an application snapshot

Restoring an application snapshot reverts all storage elements in the snapshot to the state in which the snapshot was in when the snapshot was taken. This restoration does not apply to access settings that might have changed since the snapshot was created.

Learn more

- DOC /application
- Asynchronous operations

Parameters

Name	Type	In	Required	Description
application.uuid	string	path	True	Application UUID
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an application and all associated data

DELETE `/application/applications/{uuid}`

Introduced In: 9.6

Deletes an application and all associated data.

Warning - this deletes it all, including your data

This deletes everything created with the application, including any volumes, LUNs, NFS export policies, CIFS shares, and initiator groups. Initiator groups are only destroyed if they were created as part of an application and are no longer in use by other applications.

Learn more

- DOC /application
- Asynchronous operations

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Application UUID
delete_data	boolean	query	False	By default, deleting an application deletes all of the application's data. By setting this parameter to "false", the application's data is preserved, but can no longer be managed through application APIs. • Introduced in: 9.8 • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an application

GET `/application/applications/{uuid}`

Introduced In: 9.6

Retrieves an application

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `<template>` the property corresponding to the `template.name` of the application

Property overview

An application includes three main groups or properties.

- Generic properties - such as the `name`, `template.name`, and `state` of the application. These properties are all inexpensive to retrieve and their meaning is consistent for every type of application.
- `statistics.*` - application statistics report live usage data about the application and its components. Various space and IOPS details are included at both the application level and at a per component level. The application model includes a detailed description of each property. These properties are slightly more expensive than the generic properties because live data must be collected from every storage element in the application.
- `<template>` - the property corresponding to the value of the `template.name` returns the contents of the application in the same layout that was used to provision the application. This information is very expensive to retrieve because it requires collecting information about all the storage and access settings for every element of the application. There are a few notable limitations to what can be returned in the `<template>` section:
  - The `new_igroups` array of many SAN templates is not returned by GET. This property allows igroup creation in the same call that creates an application, but is not a property of the application itself. The `new_igroups` array is allowed during PATCH operations, but that does not modify the `new_igroups` of the application. It is another way to allow igroup creation while updating the application to use a different igroup.
  - The `vdi_on_san` and `vdi_on_nas` `desktops.count` property is rounded to the nearest 1000 during creation, and is reported with that rounding applied.
  - The `mongo_db_on_san` `dataset.element_count` property is rounded up to an even number, and is reported with that rounding applied.
  - The `sql_on_san` and `sql_on_smb` `server_cores_count` property is limited to 8 for GET operations. Higher values are accepted by POST, but the impact of the `server_cores_count` property on the application layout currently reaches its limit at 8.

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Application UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Application Name. This field is user supplied when the application is created.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.

Name	Type	Description
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
smart_container	boolean	Identifies if this is a smart container or not.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
svm	svm	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.

Name	Type	Description
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    },
    "snapshots": {
      "href": "/api/resourcelink"
    }
  },
  "creation_timestamp": "string",
  "delete_data": true,
  "generation": 0,
  "name": "string",
  "nas": {
    "application_components": [
      {}
    ],
    "cifs_access": [
      {
        "access": "string",
        "user_or_group": "string"
      }
    ],
    "cifs_share_name": "string",
    "exclude_aggregates": [
      {
        "name": "string",
        "uuid": "string"
      }
    ],
    "nfs_access": [
      {
        "access": "string",
        "host": "string"
      }
    ],
    "protection_type": {
      "local_policy": "string",
      "local_rpo": "string",
      "remote_rpo": "string"
    }
  },
  "nvme": {
    "components": [
```

```
      {
        "name": "string",
        "os_type": "string",
        "performance": {
          "storage_service": {
            "name": "string"
          }
        },
        "qos": {
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "subsystem": {
          "hosts": [
            {
              "dh_hmac_chap": {
                "group_size": "string",
                "hash_function": "string"
              },
              "nqn": "string",
              "priority": "string"
            }
          ],
          "name": "string",
          "os_type": "string",
          "uuid": "string"
        },
        "tiering": {
          "policy": "string"
        }
      }
    ],
    "os_type": "string",
    "rpo": {
      "local": {
        "name": "string",
        "policy": "string"
      },
      "remote": {
        "name": "string"
      }
    }
  },
  "protection_granularity": "string",
```

```
  "rpo": {
    "components": [
      {
        "name": "string",
        "rpo": {
          "local": {
            "description": "string",
            "name": "string"
          },
          "remote": {
            "description": "string",
            "name": "string"
          }
        },
        "uuid": "string"
      }
    ],
    "local": {
      "description": "string",
      "name": "string"
    },
    "remote": {
      "description": "string",
      "name": "string"
    }
  },
  "s3_bucket": {
    "application_components": [
      {
        "access_policies": [
          {
            "actions": [
              "string"
            ],
            "conditions": [
              {
                "delimiters": [
                  "string"
                ],
                "max_keys": [
                  "integer"
                ],
                "operator": "string",
                "prefixes": [
                  "string"
                ],
```

```
                "source_ips": [
                  "string"
                ],
                "usernames": [
                  "string"
                ]
              }
            ],
            "effect": "string",
            "principals": [
              "string"
            ],
            "resources": [
              "string"
            ],
            "sid": "string"
          }
        ],
        "bucket_endpoint_type": "string",
        "comment": "string",
        "default_retention_period": "string",
        "exclude_aggregates": [
          {
            "name": "string",
            "uuid": "string"
          }
        ],
        "name": "string",
        "nas_path": "string",
        "qos": {
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "retention_mode": "string",
        "snapshot_policy": {
          "name": "string",
          "uuid": "string"
        },
        "storage_service": {
          "name": "string"
        },
        "uuid": "string",
        "versioning_state": "string"
      }
```

```
      ],
      "protection_type": {
        "remote_rpo": "string"
      }
    },
    "san": {
      "application_components": [
        {
          "igroup_name": "string",
          "name": "string",
          "os_type": "string",
          "qos": {
            "policy": {
              "name": "string",
              "uuid": "string"
            }
          },
          "storage_service": {
            "name": "string"
          },
          "tiering": {
            "policy": "string"
          }
        }
      ],
      "exclude_aggregates": [
        {
          "name": "string",
          "uuid": "string"
        }
      ],
      "os_type": "string",
      "protection_type": {
        "local_policy": "string",
        "local_rpo": "string",
        "remote_rpo": "string"
      }
    },
    "state": "string",
    "statistics": {
      "components": [
        {
          "iops": {
            "per_tb": 0,
            "total": 0
          },
```

```
        "latency": {
          "average": 0,
          "raw": 0
        },
        "name": "string",
        "snapshot": {
          "reserve": 0,
          "used": 0
        },
        "space": {
          "available": 0,
          "logical_used": 0,
          "provisioned": 0,
          "reserved_unused": 0,
          "savings": 0,
          "used": 0,
          "used_excluding_reserves": 0,
          "used_percent": 0
        },
        "storage_service": {
          "name": "string",
          "uuid": "string"
        },
        "uuid": "string"
      }
    ],
    "iops": {
      "per_tb": 0,
      "total": 0
    },
    "latency": {
      "average": 0,
      "raw": 0
    },
    "snapshot": {
      "reserve": 0,
      "used": 0
    },
    "space": {
      "available": 0,
      "logical_used": 0,
      "provisioned": 0,
      "reserved_unused": 0,
      "savings": 0,
      "used": 0,
      "used_excluding_reserves": 0,
```

```
      "used_percent": 0
    }
  },
  "svm": {
    "name": "string",
    "uuid": "string"
  },
  "template": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "protocol": "string",
    "version": 0
  },
  "uuid": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	
snapshots	href	

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
element_count	integer	The number of storage elements (LUNs for SAN) of the database to maintain. Must be an even number between 2 and 16. Odd numbers will be rounded up to the next even number within range.
replication_factor	integer	The number of data bearing members of the replicaset, including 1 primary and at least 1 secondary.
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

initiator_objects

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
os_type	string	The name of the host OS running the application.
primary_igroup_name	string	The initiator group for the primary.
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

Name	Type	Description
id	integer	The ID of an existing NFS export policy.
name	string	The name of an existing NFS export policy.

component

Name	Type	Description
name	string	Name of the source component.

svm

Name	Type	Description
name	string	Name of the source SVM.

origin

Name	Type	Description
component	component	
svm	svm	

flexcache

Name	Type	Description
dr_cache	boolean	Dr-cache is a FlexCache volume create time option that has the same flexgroup-msid as that of the origin of a FlexCache volume. By default, dr-cache is disabled. The flexgroup-msid of the FlexCache volume does not need to be same as that of the origin of a FlexCache volume.
origin	origin	

policy

Name	Type	Description
name	string	The name of an existing QoS policy.
uuid	string	The UUID of an existing QoS policy. Usage: <UUID>

qos

Name	Type	Description
policy	policy	

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as quot;Plt;num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".
retention	retention	
snaplock_type	string	The SnapLock type of the smart container.

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

nas_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
export_policy	export_policy	
flexcache	flexcache	
name	string	The name of the application component.
qos	qos	
scale_out	boolean	Denotes a Flexgroup.
share_count	integer	The number of shares in the application component.
snaplock	snaplock	
snapshot_locking_enabled	boolean	Indicates whether Snapshot copy locking is enabled on the volume.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
access	string	The CIFS access granted to the user or group.
user_or_group	string	The name of the CIFS user or group that will be granted access.

exclude_aggregates

Name	Type	Description
name	string	The name of the aggregate to exclude. Usage: <aggregate name>
uuid	string	The ID of the aggregate to exclude. Usage: <UUID>

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

Name	Type	Description
access	string	The NFS access granted.
host	string	The name of the NFS entity granted access.

protection_type

Name	Type	Description
local_policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
cifs_access	array[app_cifs_access]	The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
cifs_share_name	string	The name of the CIFS share. Usage: <Share>
exclude_aggregates	array[exclude_aggregates]	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	

Name	Type	Description
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.
os_type	string	The name of the host OS running the application.
performance	performance	
qos	qos	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering

Name	Type	Description
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.
policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>

remote

Name	Type	Description
name	string	The remote RPO of the application.

rpo

Name	Type	Description
local	local	
remote	remote	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
os_type	string	The name of the host OS running the application.
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
mirrored	boolean	Specifies whether the redo log group should be mirrored.
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
ora_home	ora_home	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
copies	integer	The number of CRS volumes.

Name	Type	Description
size	integer	The size of the Oracle CRS/voting storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
ora_home	ora_home	
oracle_crs	oracle_crs	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the component. This indicates how often component Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

components

Name	Type	Description
name	string	Component Name.
rpo	rpo	
uuid	string	Component UUID.

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the application. This indicates how often application Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the application. A remote RPO of zero indicates that the application is synchronously replicated to another cluster.

rpo

Name	Type	Description
components	array[components]	
is_supported	boolean	Is RPO supported for this application? Generation 1 applications did not support Snapshot copies or MetroCluster.
local	local	
remote	remote	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
operator	string	Policy Condition Operator.
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
conditions	array[zapp_s3_bucket_application_components_access_policies_conditions]	conditions.
effect	string	Allow or Deny Access.
principals	array[string]	
resources	array[string]	
sid	string	Statement Identifier Usage: <(size 1..256)>

snapshot_policy

Name	Type	Description
name	string	The name of the snapshot policy that is used for the S3 bucket.
uuid	string	The UUID of the snapshot policy that is used for the S3 bucket. Usage: <UUID>

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
access_policies	array[zapp_s3_bucket_application_components_access_policies]	The list of S3 objectstore policies to be created.
bucket_endpoint_type	string	The type of bucket.
capacity_tier	boolean	Prefer lower latency storage under similar media costs.
comment	string	Object Store Server Bucket Description Usage: <(size 1..256)>
default_retention_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as quot;Plt;num>Y" and quot;Plt;num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported. Usage: {{<integer> days|years} | none}
exclude_aggregates	array[exclude_aggregates]	
name	string	The name of the application component.
nas_path	string	The path to which the bucket corresponds to.
qos	qos	

Name	Type	Description
retention_mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking. For s3 type buckets, the default value is no_lock.
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
snapshot_policy	snapshot_policy	
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>
versioning_state	string	Bucket Versioning State. For nas type buckets, this field is not set. For s3 type buckets, the default value is disabled.

protection_type

Name	Type	Description
remote_rpo	string	The remote RPO of the application.

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.
protection_type	protection_type	

san_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
qos	qos	
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
exclude_aggregates	array[exclude_aggregates]	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

access

Name	Type	Description
installer	string	SQL installer admin user name.
service_account	string	SQL service account user name.

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
access	access	
db	db	
log	log	
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application component.
total	integer	The total number of IOPS being used by the application component.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this component.
raw	integer	The cumulative response time in microseconds for this component.

snapshot

Name	Type	Description
reserve	integer	The amount of space reserved by the system for Snapshot copies.
used	integer	The amount of spacing currently in use by the system to store Snapshot copies.

space

Name	Type	Description
available	integer	The available amount of space left in the application component. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application component.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.

Name	Type	Description
used	integer	The amount of space that is currently being used by the application component. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application component.

storage_service

Name	Type	Description
name	string	The storage service name. AFF systems support the extreme storage service. All other systems only support value.
uuid	string	The storage service UUID.

components

Name	Type	Description
iops	iops	
latency	latency	
name	string	Component Name.
shared_storage_pool	boolean	An application component is considered to use a shared storage pool if storage elements for for other components reside on the same aggregate as storage elements for this component.
snapshot	snapshot	
space	space	

Name	Type	Description
statistics_incomplete	boolean	If not all storage elements of the application component are currently available, the returned statistics might only include data from those elements that were available.
storage_service	storage_service	
uuid	string	Component UUID.

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application.
total	integer	The total number of IOPS being used by the application.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this application.
raw	integer	The cumulative response time in microseconds for this application.

space

Name	Type	Description
available	integer	The available amount of space left in the application. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.
used	integer	The amount of space that is currently being used by the application. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.

Name	Type	Description
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application.

statistics

Name	Type	Description
components	array[components]	
iops	iops	
latency	latency	
shared_storage_pool	boolean	An application is considered to use a shared storage pool if storage elements for multiple components reside on the same aggregate.
snapshot	snapshot	
space	space	
statistics_incomplete	boolean	If not all storage elements of the application are currently available, the returned statistics might only include data from those elements that were available.

svm

Name	Type	Description
name	string	SVM Name. Either the SVM name or UUID must be provided to create an application.
uuid	string	SVM UUID. Either the SVM name or UUID must be provided to create an application.

self_link

Name	Type	Description
self	href	

template

Name	Type	Description
_links	self_link	
name	string	The name of the template that was used to provision this application.
protocol	string	The protocol access of the template that was used to provision this application.
version	integer	The version of the template that was used to provision this application. The template version changes only if the layout of the application changes over time. For example, redo logs in Oracle RAC templates were updated and provisioned differently in DATA ONTAP 9.3.0 compared to prior releases, so the version number was increased. If layouts change in the future, the changes will be documented along with the corresponding version numbers. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
size	integer	The size of the desktops. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

hyper_v_access

Name	Type	Description
service_account	string	Hyper-V service account.

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
size	integer	The size of the datastore. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	
hypervisor	string	The name of the hypervisor hosting the application.

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update application properties

PATCH `/application/applications/{uuid}`

Introduced In: 9.6

Updates the properties of an application.

Overview

Similar to creating an application, modification is done using the template properties of an application. The `storage_service`, `size`, and `igroup_name` of an application may be modified.

`storage_service`

Storage service modifications are processed in place, meaning that the storage can not be moved to a location with more performance headroom to accommodate the request. If the current backing storage of the application is in a location that can support increased performance, the QoS policies associated with the application will be modified to allow it. If not, an error will be returned. A storage service modification to a lower tier of performance is always allowed, but the reverse modification may not be supported if the cluster is over provisioned and the cluster is unlikely to be able to fulfil the original storage service.

`size`

Size modifications are processed in a variety of ways depending on the type of application. For NAS applications, volumes are grown or new volumes are added. For SAN applications, LUNs are grown, new LUNs are added to existing volumes, or new LUNs are added to new volumes. If new storage elements are created, they can be found using the GET /application/applications/{application.uuid}/components interface. The creation time of each storage object is included, and the newly created objects will use the same naming scheme as the previous objects. Resize follows the best practices associated with the type of application being expanded. Reducing the size of an application is not supported.

`igroup_name`

Modification of the igroup name allows an entire application to be mapped from one initiator group to another. Data access will be interrupted as the LUNs are unmapped from the original igroup and remapped to the new one.

Application state

During a modification, the `state` property of the application updates to indicate `modifying`. In `modifying` state, statistics are not available and snapshot operations are not allowed. If the modification fails, it is possible for the application to be left in an inconsistent state, with the underlying ONTAP storage elements not matching across a component. When this occurs, the application is left in the `modifying` state until the command is either retried and succeeds or a call to restore the original state is successful.

Examples

1. Change the storage service of the database of the Oracle application to *extreme* and resize the redo logs to *100GB*.

```
  {
 "oracle_on_nfs": {
   "db": {
     "storage_service": {
       "name": "extreme"
     }
   },
   "redo_log": {
     "size": "100GB"
   }
 }
  }
```

2. Change the storage service, size, and igroup of a generic application by component name.

```
  {
"san": {
  "application_components": [
    {
      "name": "component1",
      "storage_service": {
        "name": "value"
      }
    },
    {
      "name": "component2",
      "size": "200GB"
    },
    {
      "name": "component3",
      "igroup_name": "igroup5"
    }
  ]
}
 }
```

Learn more

- DOC /application
- Asynchronous operations

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Application UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.

Name	Type	Description
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.

Name	Type	Description
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

Name	Type	Description
name	string	The name of an igroup to nest within a parent igroup. Mutually exclusive with initiators and initiator_objects.
uuid	string	The UUID of an igroup to nest within a parent igroup Usage: <UUID>

initiator_objects

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	The WWPN, IQN, or Alias of the initiator. Mutually exclusive with nested igroups and the initiators array.

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
new_igroups	array[mongo_db_on_san_new_igroups]	The list of initiator groups to create.
primary_igroup_name	string	The initiator group for the primary.

Name	Type	Description
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

component

svm

origin

flexcache

policy

qos

retention

snaplock

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

nas_application_components_tiering

application-components.tiering

application_components

Name	Type	Description
name	string	The name of the application component.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

exclude_aggregates

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
controller_secret_key	string	Authentication Controller Secret.
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.
host_secret_key	string	Authentication Host Secret.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.
os_type	string	The name of the host OS running the application.
performance	performance	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.

remote

rpo

Name	Type	Description
local	local	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[oracle_on_san_new_igroups]	The list of initiator groups to create.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
new_igroups	array[oracle_rac_on_san_new_igroups]	The list of initiator groups to create.

Name	Type	Description
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the component. This indicates how often component Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the component. A remote RPO of zero indicates that the component is synchronously replicated to another cluster.

rpo

Name	Type	Description
local	local	
remote	remote	

components

Name	Type	Description
name	string	Component Name.
rpo	rpo	

Name	Type	Description
uuid	string	Component UUID.

local

Name	Type	Description
description	string	A detailed description of the local RPO. This will include details about the Snapshot copy schedule.
name	string	The local RPO of the application. This indicates how often application Snapshot copies are automatically created.

remote

Name	Type	Description
description	string	A detailed description of the remote RPO.
name	string	The remote RPO of the application. A remote RPO of zero indicates that the application is synchronously replicated to another cluster.

rpo

Name	Type	Description
components	array[components]	
is_supported	boolean	Is RPO supported for this application? Generation 1 applications did not support Snapshot copies or MetroCluster.
local	local	
remote	remote	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
principals	array[string]	
resources	array[string]	

snapshot_policy

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
name	string	The name of the application component.
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.

san_application_components_tiering

application-components.tiering

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.

Name	Type	Description
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
new_igroups	array[san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
os_type	string	The name of the host OS accessing the application. The default value is the host OS that is running the application.
protocol	string	The protocol of the new initiator group.

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
new_igroups	array[sql_on_san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	
temp_db	temp_db	

access

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
db	db	
log	log	
protection_type	protection_type	
temp_db	temp_db	

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application component.
total	integer	The total number of IOPS being used by the application component.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this component.
raw	integer	The cumulative response time in microseconds for this component.

snapshot

Name	Type	Description
reserve	integer	The amount of space reserved by the system for Snapshot copies.
used	integer	The amount of spacing currently in use by the system to store Snapshot copies.

space

Name	Type	Description
available	integer	The available amount of space left in the application component. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application component.

Name	Type	Description
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.
used	integer	The amount of space that is currently being used by the application component. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application component.

storage_service

Name	Type	Description
name	string	The storage service name. AFF systems support the extreme storage service. All other systems only support value.
uuid	string	The storage service UUID.

components

Name	Type	Description
iops	iops	
latency	latency	
name	string	Component Name.

Name	Type	Description
shared_storage_pool	boolean	An application component is considered to use a shared storage pool if storage elements for for other components reside on the same aggregate as storage elements for this component.
snapshot	snapshot	
space	space	
statistics_incomplete	boolean	If not all storage elements of the application component are currently available, the returned statistics might only include data from those elements that were available.
storage_service	storage_service	
uuid	string	Component UUID.

iops

Name	Type	Description
per_tb	integer	The number of IOPS per terabyte of logical space currently being used by the application.
total	integer	The total number of IOPS being used by the application.

latency

Name	Type	Description
average	integer	The cumulative average response time in microseconds for this application.
raw	integer	The cumulative response time in microseconds for this application.

space

Name	Type	Description
available	integer	The available amount of space left in the application. Note that this field has limited meaning for SAN applications. Space may be considered used from ONTAP's perspective while the host filesystem still considers it available. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
logical_used	integer	The amount of space that would currently be used if no space saving features were enabled. For example, if compression were the only space saving feature enabled, this field would represent the uncompressed amount of space used.
provisioned	integer	The originally requested amount of space that was provisioned for the application.
reserved_unused	integer	The amount of space reserved for system features such as Snapshot copies that has not yet been used.
savings	integer	The amount of space saved by all enabled space saving features.
used	integer	The amount of space that is currently being used by the application. Note that this includes any space reserved by the system for features such as Snapshot copies.
used_excluding_reserves	integer	The amount of space that is currently being used, excluding any space that is reserved by the system for features such as Snapshot copies.

Name	Type	Description
used_percent	integer	The percentage of the originally provisioned space that is currently being used by the application.

statistics

Name	Type	Description
components	array[components]	
iops	iops	
latency	latency	
shared_storage_pool	boolean	An application is considered to use a shared storage pool if storage elements for multiple components reside on the same aggregate.
snapshot	snapshot	
space	space	
statistics_incomplete	boolean	If not all storage elements of the application are currently available, the returned statistics might only include data from those elements that were available.

self_link

template

Name	Type	Description
protocol	string	The protocol access of the template that was used to provision this application.

Name	Type	Description
version	integer	The version of the template that was used to provision this application. The template version changes only if the layout of the application changes over time. For example, redo logs in Oracle RAC templates were updated and provisioned differently in DATA ONTAP 9.3.0 compared to prior releases, so the version number was increased. If layouts change in the future, the changes will be documented along with the corresponding version numbers. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
storage_service	storage_service	

hyper_v_access

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
protocol	string	The protocol of the new initiator group.

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[vdi_on_san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroups]	
initiator_objects	array[initiator_objects]	
initiators	array[string]	
name	string	The name of the new initiator group.
protocol	string	The protocol of the new initiator group.

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
new_igroups	array[vsi_on_san_new_igroups]	The list of initiator groups to create.
protection_type	protection_type	

application

Applications

Name	Type	Description
_links	_links	
creation_timestamp	string	The time when the application was created.
generation	integer	The generation number of the application. This indicates which features are supported on the application. For example, generation 1 applications do not support Snapshot copies. Support for Snapshot copies was added at generation 2. Any future generation numbers and their feature set will be documented.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.

Name	Type	Description
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protection_granularity	string	Protection granularity determines the scope of Snapshot copy operations for the application. Possible values are "application" and "component". If the value is "application", Snapshot copy operations are performed on the entire application. If the value is "component", Snapshot copy operations are performed separately on the application components.
rpo	rpo	
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
state	string	The state of the application. For full functionality, applications must be in the online state. Other states indicate that the application is in a transient state and not all operations are supported.
statistics	statistics	
template	template	
uuid	string	Application UUID. This field is generated when the application is created.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage application consistency groups

Application consistency-groups endpoint overview

Overview

A consistency group is a group of volumes that supports capabilities such as creating a snapshot of all of its member volumes at the same point-in-time with a write-fence, thus ensuring a consistent image of the volumes at that time.

Applications with datasets scoped to a single volume can have its contents saved to a snapshot, replicated, or cloned in a crash-consistent manner implicitly with corresponding native ONTAP volume-granular operations. Applications with datasets spanning a group of multiple volumes must have such operations performed on the group. Typically, by first fencing writes to all the volumes in the group, flushing any writes pending in queues, executing the intended operation, that is, take snapshot of every volume in the group and when that is complete, unfence and resume writes. A consistency group is the conventional mechanism for providing such group semantics.

Consistency group APIs

The following APIs are used to perform operations related to consistency groups:

– GET /api/application/consistency-groups

– POST /api/application/consistency-groups

– GET /api/application/consistency-groups/{uuid}

– PATCH /api/application/consistency-groups/{uuid}

– DELETE /api/application/consistency-groups/{uuid}

Examples

Retrieving all consistency groups of an SVM

```
# The API:
/api/application/consistency-groups

# The call:
curl -X GET "https://<mgmt-ip>/api/application/consistency-
groups?svm.name=vs1" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/6f48d798-0a7f-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
    "name": "parent_cg",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b22c85-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
```

```
    "uuid": "c1b270b1-0a82-11ec-a449-005056bbcf9f",
    "name": "child_1",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b270b1-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b270c3-0a82-11ec-a449-005056bbcf9f",
    "name": "child_2",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b270c3-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/application/consistency-groups"
  }
}
}
```

Retrieving details of all consistency groups of an SVM

Retrieving details of the consistency groups for a specified SVM. These details are considered to be performant and will return within 1 second when 40 records or less are requested.

```
curl -X GET "https://<mgmt-ip>/api/application/consistency-
groups?svm.name=vs1&fields=*&max_records=40"

#### Response:
{
"records": [
  {
    "uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
    "name": "vol1",
    "svm": {
      "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
      "name": "vs1",
      "_links": {
```

```
        "self": {
          "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
        }
      }
    },
    "space": {
      "size": 108003328,
      "available": 107704320,
      "used": 299008
    },
    "replicated": false,
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/6f48d798-0a7f-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
    "name": "parent_cg",
    "svm": {
      "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
        }
      }
    },
    "snapshot_policy": {
      "name": "default-1weekly",
      "uuid": "a30bd0fe-067d-11ec-a449-005056bbcf9f",
      "_links": {
        "self": {
          "href": "/api/storage/snapshot-policies/a30bd0fe-067d-11ec-a449-
005056bbcf9f"
        }
      }
    },
    "consistency_groups": [
      {
        "uuid": "c1b270b1-0a82-11ec-a449-005056bbcf9f",
        "name": "child_1",
        "space": {
          "size": 41943040,
```

```
          "available": 39346176,
          "used": 499712
        },
        "_links": {
          "self": {
            "href": "/api/application/consistency-groups/c1b270b1-0a82-
11ec-a449-005056bbcf9f"
          }
        }
      },
      {
        "uuid": "c1b270c3-0a82-11ec-a449-005056bbcf9f",
        "name": "child_2",
        "space": {
          "size": 41943040,
          "available": 39350272,
          "used": 495616
        },
        "_links": {
          "self": {
            "href": "/api/application/consistency-groups/c1b270c3-0a82-
11ec-a449-005056bbcf9f"
          }
        }
      }
    ],
    "space": {
      "size": 83886080,
      "available": 78696448,
      "used": 995328
    },
    "replicated": false,
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b22c85-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b270b1-0a82-11ec-a449-005056bbcf9f",
    "name": "child_1",
    "parent_consistency_group": {
      "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
      "name": "parent_cg",
      "_links": {
```

```
        "self": {
          "href": "/api/application/consistency-groups/c1b22c85-0a82-11ec-
a449-005056bbcf9f"
        }
      }
    },
    "svm": {
      "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
        }
      }
    },
    "snapshot_policy": {
      "name": "default",
      "uuid": "a30b60a4-067d-11ec-a449-005056bbcf9f",
      "_links": {
        "self": {
          "href": "/api/storage/snapshot-policies/a30b60a4-067d-11ec-a449-
005056bbcf9f"
        }
      }
    },
    "space": {
      "size": 41943040,
      "available": 39346176,
      "used": 499712
    },
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b270b1-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b270c3-0a82-11ec-a449-005056bbcf9f",
    "name": "child_2",
    "parent_consistency_group": {
      "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
      "name": "parent_cg",
      "_links": {
        "self": {
          "href": "/api/application/consistency-groups/c1b22c85-0a82-11ec-
```

```
a449-005056bbcf9f"
        }
      }
    },
    "svm": {
      "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
        }
      }
    },
    "snapshot_policy": {
      "name": "default",
      "uuid": "a30b60a4-067d-11ec-a449-005056bbcf9f",
      "_links": {
        "self": {
          "href": "/api/storage/snapshot-policies/a30b60a4-067d-11ec-a449-
005056bbcf9f"
        }
      }
    },
    "space": {
      "size": 41943040,
      "available": 39350272,
      "used": 495616
    },
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b270c3-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/application/consistency-
groups?svm.name=vs1&fields=*&max_records=40"
  }
}
}
```

Retrieving details of non-nested consistency groups

Retrieves details of the consistency groups without nested consistency groups, or only the parent consistency group for a number of consistency groups of a specified SVM.

```
curl -X GET "https://<mgmt-ip>/api/application/consistency-
groups?svm.name=vs1&parent_consistency_group.uuid=null"

#### Response:
{
"records": [
  {
    "uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
    "name": "vol1",
    "svm": {
      "name": "vs1"
    },
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/6f48d798-0a7f-11ec-
a449-005056bbcf9f"
      }
    }
  },
  {
    "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
    "name": "parent_cg",
    "svm": {
      "name": "vs1"
    },
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/c1b22c85-0a82-11ec-
a449-005056bbcf9f"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/application/consistency-
groups?svm.name=vs1&parent_consistency_group.uuid=null"
  }
}
}
```

Creating a single consistency group with a new SAN volume

Provisions an application with one consistency group, each with one new SAN volumes, with one LUN, an igroup and no explicit snapshot policy, FabricPool tiering policy, storage service, and QoS policy specification. The igroup to map a LUN to is specified at LUN-granularity.

```
curl -X POST https://<mgmt-ip>/api/application/consistency-
groups?return_records=true -d '{ "svm": { "name": "vs1" }, "luns": [ {
"name": "/vol/vol1/lun1", "space": { "size": "100mb" }, "os_type":
"linux", "lun_maps": [ { "igroup": { "name": "igroup1", "initiators": [ {
"name": "example_name" } ] } } ] } ] }'

#### Response:
{
"num_records": 1,
"records": [
  {
    "uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
    "name": "vol1",
    "svm": {
    "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
      }
    }
    },
    "luns": [
    {
      "lun_maps": [
        {
          "igroup": {
            "name": "igroup1",
            "initiators": [
              {
                "name": "example_name"
              }
            ]
          }
        }
      ],
      "name": "/vol/vol1/lun1",
      "os_type": "linux",
      "space": {
        "size": 104857600
      }
```

```
    }
    ]
  }
],
"job": {
  "uuid": "6f4907ae-0a7f-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
    "href": "/api/cluster/jobs/6f4907ae-0a7f-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Creating an Application with two consistency groups with existing SAN volumes

Provisions an application with two consistency groups, each with two existing SAN volumes, a snapshot policy at application-granularity, and a distinct consistency group granular snapshot policy.

```
curl -X POST https://<mgmt-ip>/api/application/consistency-
groups?return_records=true -d '{ "svm": { "name": "vs1" }, "name":
"parent_cg", "snapshot_policy": { "name": "default-1weekly" },
"consistency_groups": [ { "name": "child_1", "snapshot_policy": { "name":
"default" }, "volumes": [ { "name": "existing_vol1",
"provisioning_options": { "action": "add" } }, { "name": "existing_vol2",
"provisioning_options": { "action": "add" } } ] }, { "name": "child_2",
"snapshot_policy": { "name": "default" }, "volumes": [ { "name":
"existing_vol3", "provisioning_options": { "action": "add" } }, { "name":
"existing_vol4", "provisioning_options": { "action": "add" } } ] } ] }'

#### Response:
{
"num_records": 1,
"records": [
  {
    "uuid": "c1b22c85-0a82-11ec-a449-005056bbcf9f",
    "name": "parent_cg",
    "svm": {
      "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
        }
      }
    },
```

```
    "snapshot_policy": {
      "name": "default-1weekly"
    },
    "consistency_groups": [
      {
        "uuid": "c1b270b1-0a82-11ec-a449-005056bbcf9f",
        "name": "child_1",
        "snapshot_policy": {
          "name": "default"
        },
        "volumes": [
          {
            "name": "existing_vol1"
          },
          {
            "name": "existing_vol2"
          }
        ]
      },
      {
        "uuid": "c1b270c3-0a82-11ec-a449-005056bbcf9f",
        "name": "child_2",
        "snapshot_policy": {
          "name": "default"
        },
        "volumes": [
          {
            "name": "existing_vol3"
          },
          {
            "name": "existing_vol4"
          }
        ]
      }
    ]
  }
],
"job": {
  "uuid": "c1b272b9-0a82-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c1b272b9-0a82-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Retrieving specific details of an existing consistency group

Retrieves the details of an existing consistency group.

```
curl -X GET https://<mgmt-ip>/api/application/consistency-groups/6f48d798-
0a7f-11ec-a449-005056bbcf9f

#### Response:
{
"uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
"name": "vol1",
"svm": {
  "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
    }
  }
},
"space": {
  "size": 108003328,
  "available": 107724800,
  "used": 278528
},
"replicated": false,
"_links": {
  "self": {
    "href": "/api/application/consistency-groups/6f48d798-0a7f-11ec-a449-
005056bbcf9f"
  }
}
}
```

Retrieving all details of an existing consistency group

Retrieves all details of an existing consistency group. These details are expensive and are not guaranteed to return within one second.

```
curl -X GET https://<mgmt-ip>/api/application/consistency-groups/6f48d798-
0a7f-11ec-a449-005056bbcf9f?fields=**

#### Response:
{
"uuid": "6f48d798-0a7f-11ec-a449-005056bbcf9f",
"name": "vol1",
```

```
"svm": {
  "uuid": "4853f97a-0a63-11ec-a449-005056bbcf9f",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/4853f97a-0a63-11ec-a449-005056bbcf9f"
    }
  }
},
"qos": {
  "policy": {
    "uuid": "b7189398-e572-48ab-8f69-82cd46580812",
    "name": "extreme-fixed",
    "_links": {
      "self": {
        "href": "/api/storage/qos/policies/b7189398-e572-48ab-8f69-
82cd46580812"
      }
    }
  }
},
"tiering": {
  "policy": "none"
},
"create_time": "2021-08-31T13:18:24-04:00",
"volumes": [
  {
    "uuid": "6f516c6c-0a7f-11ec-a449-005056bbcf9f",
    "qos": {
      "policy": {
        "uuid": "b7189398-e572-48ab-8f69-82cd46580812",
        "name": "extreme-fixed",
        "_links": {
          "self": {
            "href": "/api/storage/qos/policies/b7189398-e572-48ab-8f69-
82cd46580812"
          }
        }
      }
    },
    "tiering": {
      "policy": "none"
    },
    "comment": "",
    "create_time": "2021-08-31T13:18:22-04:00",
    "name": "vol1",
```

```
    "snapshot_policy": {
      "name": "default",
      "uuid": "a30b60a4-067d-11ec-a449-005056bbcf9f"
    },
    "space": {
      "size": 108003328,
      "available": 107569152,
      "used": 434176,
      "snapshot": {
        "used": 151552,
        "reserve_percent": 0,
        "autodelete_enabled": false
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/6f516c6c-0a7f-11ec-a449-
005056bbcf9f"
      }
    }
  }
],
"luns": [
  {
    "uuid": "6f51748a-0a7f-11ec-a449-005056bbcf9f",
    "location": {
      "logical_unit": "lun1",
      "node": {
        "name": "example_node_name",
        "uuid": "6eb682f2-067d-11ec-a449-005056bbcf9f",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/6eb682f2-067d-11ec-a449-
005056bbcf9f"
          }
        }
      },
      "volume": {
        "uuid": "6f516c6c-0a7f-11ec-a449-005056bbcf9f",
        "name": "vol1",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/6f516c6c-0a7f-11ec-a449-
005056bbcf9f"
          }
        }
```

```
      }
    },
    "lun_maps": [
      {
        "igroup": {
          "uuid": "6f4a4b86-0a7f-11ec-a449-005056bbcf9f",
          "name": "igroup1",
          "os_type": "linux",
          "protocol": "mixed",
          "initiators": [
            {
              "name": "example_name"
            }
          ],
          "_links": {
            "self": {
              "href": "/api/protocols/san/igroups/6f4a4b86-0a7f-11ec-a449-
005056bbcf9f"
            }
          }
        },
        "logical_unit_number": 0
      }
    ],
    "name": "/vol/vol1/lun1",
    "auto_delete": false,
    "class": "regular",
    "create_time": "2021-08-31T13:18:24-04:00",
    "os_type": "linux",
    "serial_number": "wIqM6]RfQK3t",
    "space": {
      "size": 104857600,
      "used": 0,
      "guarantee": {
        "requested": false,
        "reserved": false
      }
    },
    "status": {
      "container_state": "online",
      "mapped": true,
      "read_only": false,
      "state": "online"
    },
    "_links": {
      "self": {
```

```
        "href": "/api/storage/luns/6f51748a-0a7f-11ec-a449-005056bbcf9f"
      }
    }
  }
],
"space": {
  "size": 108003328,
  "available": 107569152,
  "used": 434176
},
"replicated": false,
"_links": {
  "self": {
    "href": "/api/application/consistency-groups/6f48d798-0a7f-11ec-a449-
005056bbcf9f?fields=**"
  }
}
}
```


Adding LUNs to an existing volume in an existing consistency group

Adds two NVMe namespaces to an existing volume in an existing consistency group, creates a new subsystem, and binds the new namespaces to it.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f48d798-0a7f-11ec-a449-005056bbcf9f' -d '{ "luns": [ { "name":
"/vol/vol1/new_luns", "provisioning_options": { "count": 2, "action":
"create" }, "space": { "size": "100mb" }, "os_type": "linux", "lun_maps":
[ { "igroup": { "name": "igroup2", "initiators": [ { "name":
"01:02:03:04:05:06:07:01" } ] } } ] } ] }'

#### Response:
{
"job": {
  "uuid": "5306ea44-0a87-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5306ea44-0a87-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Restoring a consistency group to the contents of an existing snapshot

Restores an existing consistency group to the contents of an existing snapshot of the consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "restore_to": {
"snapshot": { "uuid": "92c6c770-17a1-11eb-b141-005056acd498"} } }' -H
"Accept: Application/hal+json"

#### Response:
{
"job": {
  "uuid": "8907bd9e-1463-11eb-a719-005056ac70af",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8907bd9e-1463-11eb-a719-005056ac70af"
    }
  }
}
}
```

Deleting a consistency group

Deletes a consistency group, where all storage originally associated with that consistency group remains in place.

```
curl -X DELETE 'https://<mgmt-ip>/api/application/consistency-
groups/6f48d798-0a7f-11ec-a449-005056bbcf9f'

#### Response:
{
}
```

Cloning an existing consistency group

The following example clones an existing consistency group with the current contents:

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-groups' -d '{
"name": "clone01_of_cg01","svm": { "name": "vs_0"},"clone": { "volume": {
"prefix": "my_clone_pfx","suffix": "my_clone_sfx"},"split_initiated":
true,"parent_consistency_group": { "name": "cg01","uuid": "ca5e76fb-98c0-
11ec-855a-005056a7693b"},"guarantee": { "type": "none"} } }' -H "accept:
application/hal+json"

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Cloning a consistency group from an existing snapshot

The following example clones an existing consistency group with contents from an existing snapshot:

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-groups' -d '{
"name": "clone01_of_cg01","svm": { "name": "vs_0"},"clone": { "volume": {
"prefix": "my_clone_pfx","suffix": "my_clone_sfx"},"split_initiated":
true,"parent_snapshot":{ "name":
"snap01_of_cg01"},"parent_consistency_group": { "name": "cg01","uuid":
"ca5e76fb-98c0-11ec-855a-005056a7693b"},"guarantee": { "type": "none"} }
}' -H "accept: application/hal+json"

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Adding namespaces to an existing volume in an existing consistency group

To add two NVMe Namespaces to an existing volume in an existing consistency group, create a new subsystem and bind the new namespaces to it.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "namespaces": [ {
"name": "/vol/vol1/new_namespace", "space": { "size": "10M" }, "os_type":
"windows", "provisioning_options": { "count": 2 }, "subsystem_map": {
"subsystem": { "name": "mySubsystem", "hosts": [ { "nqn": "nqn.1992-
08.com.netapp:sn.d04594ef915b4c73b642169e72e4c0b1:subsystem.host1" }, {
"nqn": "nqn.1992-
08.com.netapp:sn.d04594ef915b4c73b642169e72e4c0b1:subsystem.host2" } ] } }
} ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Add a new volume in an existing consistency group

The following example adds two new volumes to an existing consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "volumes" : [ { "name":
"new_vol_", "provisioning_options": { "count" : "2"}, "space": { "size":
"1gb"} } ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Adding an existing volume to an existing consistency group

The following example adds an existing volume to an existing consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "volumes" : [ { "name":
"existing_vol", "provisioning_options": { "action" : "add"} } ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Promoting a single consistency group to a nested consistency group

The following example promotes a single consistency group to a nested consistency group with a new child consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "provisioning_options":
{ "action":"promote" }, "consistency_groups": [ { "name":"cg_child",
"provisioning_options": { "action":"create" } } ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Demoting a nested consistency group to a single consistency group

The following example demotes (flattens) a nested consistency group to a single consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "provisioning_options":
{ "action":"demote" } }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Adding a new child consistency group to nested consistency group

The following example adds a new child consistency group to an existing nested consistency group, creating a new volume.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "consistency_groups": [
{ "name": "cg_child5", "provisioning_options": { "action" : "create" },
"volumes": [ { "name": "child5_vol_1", "space": { "size": "100mb" } } ] }
] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Removing a child consistency group from nested consistency group

The following example removes a child consistency group from a nested consistency, changing it to a single consistency group with a new consistency group name.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "consistency_groups": [
{ "name": "cg_child5", "provisioning_options": { "action" : "remove",
"name" : "new_single_cg" } } ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Create a new parent consistency group with an existing consistency group

The following example creates a new nested consistency group with an existing consistency group as child consistency group.

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-groups' -d '{
"svm": { "name": "vs1" }, "name": "cg_parent2", "consistency_groups": [ {
"name": "cg_large", "provisioning_options":{ "action": "add" } }, {
"name": "cg_standalone2", "provisioning_options":{ "action": "add" } } ]
}'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Reassign a volume to another child consistency group.

The following example reassigns a volume from a child consistency group to another child consistency group with the same parent consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/6f51748a-0a7f-11ec-a449-005056bbcf9f' -d '{ "consistency_groups": [
{ "name": "cg_child1", "volumes": [ { "name": "child2_vol_1",
"provisioning_options": { "action":"reassign"} } ] }, { "name":
"cg_child2" } ] }'

#### Response:
{
"job": {
  "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
    }
  }
}
}
```

Retrieve details of a collection or consistency group

GET `/application/consistency-groups`

Introduced In: 9.10

Retrieve details of a collection or a specific consistency group.

Notes

When volume granular properties, such as, the storage SLC, Fabric Pool tiering are not the same for all the existing volumes of a consistency group, the corresponding property is not reported at consistency group granularity. It is only reported if all the volumes of the consistency group have the same value for that property.

If this consistency group instance has 1 or more replication relationships, the "replicated" parameter is true. If there are no associated replication relationships, it is false. This parameter is only included in the output for Single-CG and Parent-CG, not for Child-CG.
If this consistency group instance has 1 or more replication relationships, the "replication_relationships" parameter is included in the output for Single-CG and Parent-CG instances. If there are no associated replication relationships, this parameter is not included in the output.
Note that this parameter is an array and as such it has as many elements as the number of replication relationships associated with this consistency group. Each element of the array describes properties of one replication relationship associated with this consistency group. The "uuid" parameter identifies a specific replication relationship and the "href" parameter is a link to the corresponding SnapMirror relationship. The "is_source" parameter is true if this consistency group is the source in that relationship, otherwise it is false.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See DOC Requesting specific fields to learn more.

- `volumes`
- `luns`
- `namespaces`

Related ONTAP commands

- `vserver consistency-group show'

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
vdisk_type	string	query	False	Filter by vdisk_type • Introduced in: 9.17
replicated	boolean	query	False	Filter by replicated
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
namespaces.comment	string	query	False	Filter by namespaces.comment • Introduced in: 9.12 • maxLength: 254 • minLength: 0
namespaces.subsystem_map.subsystem.comment	string	query	False	Filter by namespaces.subsystem_map.subsystem.comment • Introduced in: 9.12 • maxLength: 255 • minLength: 0
namespaces.subsystem_map.subsystem.uuid	string	query	False	Filter by namespaces.subsystem_map.subsystem.uuid • Introduced in: 9.12
namespaces.subsystem_map.subsystem.os_type	string	query	False	Filter by namespaces.subsystem_map.subsystem.os_type • Introduced in: 9.12
namespaces.subsystem_map.subsystem.name	string	query	False	Filter by namespaces.subsystem_map.subsystem.name • Introduced in: 9.12 • maxLength: 64 • minLength: 1

Name	Type	In	Required	Description
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size • Introduced in: 9.14
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function • Introduced in: 9.14
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode • Introduced in: 9.16
namespaces.subsystem_map.subsystem.hosts.tls.key_type	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.tls.key_type • Introduced in: 9.16
namespaces.subsystem_map.subsystem.hosts.nqn	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.nqn • Introduced in: 9.12
namespaces.subsystem_map.subsystem.hosts.priority	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.priority • Introduced in: 9.14

Name	Type	In	Required	Description
namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid • Introduced in: 9.17
namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name • Introduced in: 9.17
namespaces.subsystem_map.subsystem.hosts.proximity.local_svm	boolean	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.local_svm • Introduced in: 9.17
namespaces.subsystem_map.nsid	string	query	False	Filter by namespaces.subsystem_map.nsid • Introduced in: 9.12
namespaces.subsystem_map.anagrpid	string	query	False	Filter by namespaces.subsystem_map.anagrpid • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.space.size	integer	query	False	Filter by namespaces.space.size • Introduced in: 9.12 • Max value: 140737488355328 • Min value: 4096
namespaces.space.guarantee.requested	boolean	query	False	Filter by namespaces.space.guarantee.requested • Introduced in: 9.12
namespaces.space.guarantee.reserved	boolean	query	False	Filter by namespaces.space.guarantee.reserved • Introduced in: 9.12
namespaces.space.block_size	integer	query	False	Filter by namespaces.space.block_size • Introduced in: 9.12
namespaces.space.used	integer	query	False	Filter by namespaces.space.used • Introduced in: 9.12
namespaces.create_time	string	query	False	Filter by namespaces.create_time • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.name	string	query	False	Filter by namespaces.name • Introduced in: 9.12
namespaces.uuid	string	query	False	Filter by namespaces.uuid • Introduced in: 9.12
namespaces.status.read_only	boolean	query	False	Filter by namespaces.status.read_only • Introduced in: 9.12
namespaces.status.state	string	query	False	Filter by namespaces.status.state • Introduced in: 9.12
namespaces.status.mapped	boolean	query	False	Filter by namespaces.status.mapped • Introduced in: 9.12
namespaces.status.container_state	string	query	False	Filter by namespaces.status.container_state • Introduced in: 9.12
namespaces.auto_delete	boolean	query	False	Filter by namespaces.auto_delete • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.enabled	boolean	query	False	Filter by namespaces.enabled • Introduced in: 9.12
namespaces.os_type	string	query	False	Filter by namespaces.os_type • Introduced in: 9.12
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.13
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.13
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.13
metric.throughput.other	integer	query	False	Filter by metric.throughput.other • Introduced in: 9.13
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.13

Name	Type	In	Required	Description
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.13
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.13
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.13
metric.used_space	integer	query	False	Filter by metric.used_space • Introduced in: 9.13
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.13
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.13
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.13
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.13

Name	Type	In	Required	Description
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.13
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.13
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.13
metric.size	integer	query	False	Filter by metric.size • Introduced in: 9.13
metric.available_space	integer	query	False	Filter by metric.available_space • Introduced in: 9.13
name	string	query	False	Filter by name
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid
_tags	string	query	False	Filter by _tags • Introduced in: 9.15

Name	Type	In	Required	Description
luns.space.size	integer	query	False	Filter by luns.space.size • Max value: 140737488355328 • Min value: 4096
luns.space.guarantee.requested	boolean	query	False	Filter by luns.space.guarantee.requested • Introduced in: 9.11
luns.space.guarantee.reserved	boolean	query	False	Filter by luns.space.guarantee.reserved • Introduced in: 9.11
luns.space.used	integer	query	False	Filter by luns.space.used
luns.create_time	string	query	False	Filter by luns.create_time
luns.name	string	query	False	Filter by luns.name
luns.comment	string	query	False	Filter by luns.comment • maxLength: 254 • minLength: 0
luns.qos.policy.max_throughput_iops	integer	query	False	Filter by luns.qos.policy.max_throughput_iops • Max value: 2147483647 • Min value: 0

Name	Type	In	Required	Description
luns.qos.policy.max_throughput_mbps	integer	query	False	Filter by luns.qos.policy.max_throughput_mbps • Max value: 4194303 • Min value: 0
luns.qos.policy.uuid	string	query	False	Filter by luns.qos.policy.uuid
luns.qos.policy.min_throughput_mbps	integer	query	False	Filter by luns.qos.policy.min_throughput_mbps • Max value: 4194303 • Min value: 0
luns.qos.policy.name	string	query	False	Filter by luns.qos.policy.name
luns.qos.policy.min_throughput_iops	integer	query	False	Filter by luns.qos.policy.min_throughput_iops • Max value: 2147483647 • Min value: 0
luns.lun_maps.logical_unit_number	integer	query	False	Filter by luns.lun_maps.logical_unit_number
luns.lun_maps.igroup.uuid	string	query	False	Filter by luns.lun_maps.igroup.uuid
luns.lun_maps.igroup.comment	string	query	False	Filter by luns.lun_maps.igroup.comment • Introduced in: 9.11 • maxLength: 254 • minLength: 0

Name	Type	In	Required	Description
luns.lun_maps.igroup.initiators.name	string	query	False	Filter by luns.lun_maps.igroup.initiators.name
luns.lun_maps.igroup.initiators.comment	string	query	False	Filter by luns.lun_maps.igroup.initiators.comment • maxLength: 254 • minLength: 0
luns.lun_maps.igroup.os_type	string	query	False	Filter by luns.lun_maps.igroup.os_type
luns.lun_maps.igroup.name	string	query	False	Filter by luns.lun_maps.igroup.name • maxLength: 96 • minLength: 1
luns.lun_maps.igroup.igroups.name	string	query	False	Filter by luns.lun_maps.igroup.igroups.name • maxLength: 96 • minLength: 1
luns.lun_maps.igroup.igroups.uuid	string	query	False	Filter by luns.lun_maps.igroup.igroups.uuid
luns.lun_maps.igroup.protocol	string	query	False	Filter by luns.lun_maps.igroup.protocol
luns.enabled	boolean	query	False	Filter by luns.enabled
luns.os_type	string	query	False	Filter by luns.os_type

Name	Type	In	Required	Description
luns.serial_number	string	query	False	Filter by luns.serial_number • maxLength: 12 • minLength: 12
luns.uuid	string	query	False	Filter by luns.uuid
replication_source	boolean	query	False	Filter by replication_source
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.13
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.13
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.13
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.13
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.13

Name	Type	In	Required	Description
statistics.used_space	integer	query	False	Filter by statistics.used_space • Introduced in: 9.13
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.13
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.13
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.13
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other • Introduced in: 9.13
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.13
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.13

Name	Type	In	Required	Description
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.13
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.13
statistics.available_space	integer	query	False	Filter by statistics.available_space • Introduced in: 9.13
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.13
statistics.size	integer	query	False	Filter by statistics.size • Introduced in: 9.13
volumes.comment	string	query	False	Filter by volumes.comment • maxLength: 1023 • minLength: 0
volumes.qos.policy.name	string	query	False	Filter by volumes.qos.policy.name
volumes.qos.policy.uuid	string	query	False	Filter by volumes.qos.policy.uuid

Name	Type	In	Required	Description
volumes.space.size	integer	query	False	Filter by volumes.space.size
volumes.space.available	integer	query	False	Filter by volumes.space.available
volumes.space.used	integer	query	False	Filter by volumes.space.used
volumes.tiering.policy	string	query	False	Filter by volumes.tiering.policy
volumes.snapshot_policy.name	string	query	False	Filter by volumes.snapshot_policy.name
volumes.snapshot_policy.uuid	string	query	False	Filter by volumes.snapshot_policy.uuid
volumes.name	string	query	False	Filter by volumes.name • maxLength: 203 • minLength: 1
volumes.uuid	string	query	False	Filter by volumes.uuid
volumes.nas.uid	integer	query	False	Filter by volumes.nas.uid • Introduced in: 9.12
volumes.nas.export_policy.rules.chown_mode	string	query	False	Filter by volumes.nas.export_policy.rules.chown_mode • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.export_policy.rules.ntfs_unix_security	string	query	False	Filter by volumes.nas.export_policy.rules.ntfs_unix_security • Introduced in: 9.12
volumes.nas.export_policy.rules.clients.match	string	query	False	Filter by volumes.nas.export_policy.rules.clients.match • Introduced in: 9.12
volumes.nas.export_policy.rules.index	integer	query	False	Filter by volumes.nas.export_policy.rules.index • Introduced in: 9.12
volumes.nas.export_policy.rules.superuser	string	query	False	Filter by volumes.nas.export_policy.rules.superuser • Introduced in: 9.12
volumes.nas.export_policy.rules.rw_rule	string	query	False	Filter by volumes.nas.export_policy.rules.rw_rule • Introduced in: 9.12
volumes.nas.export_policy.rules.allow_device_creation	boolean	query	False	Filter by volumes.nas.export_policy.rules.allow_device_creation • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.export_policy.rules.anonymous_user	string	query	False	Filter by volumes.nas.export_policy.rules.anonymous_user • Introduced in: 9.12
volumes.nas.export_policy.rules.ro_rule	string	query	False	Filter by volumes.nas.export_policy.rules.ro_rule • Introduced in: 9.12
volumes.nas.export_policy.rules.allow_suid	boolean	query	False	Filter by volumes.nas.export_policy.rules.allow_suid • Introduced in: 9.12
volumes.nas.export_policy.rules.protocols	string	query	False	Filter by volumes.nas.export_policy.rules.protocols • Introduced in: 9.12
volumes.nas.export_policy.id	integer	query	False	Filter by volumes.nas.export_policy.id • Introduced in: 9.14
volumes.nas.export_policy.name	string	query	False	Filter by volumes.nas.export_policy.name • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.junction_parent.name	string	query	False	Filter by volumes.nas.junction_parent.name • Introduced in: 9.12
volumes.nas.junction_parent.uuid	string	query	False	Filter by volumes.nas.junction_parent.uuid • Introduced in: 9.12
volumes.nas.cifs.shares.access_based_enumeration	boolean	query	False	Filter by volumes.nas.cifs.shares.access_based_enumeration • Introduced in: 9.12
volumes.nas.cifs.shares.name	string	query	False	Filter by volumes.nas.cifs.shares.name • Introduced in: 9.12 • maxLength: 80 • minLength: 1
volumes.nas.cifs.shares.acls.type	string	query	False	Filter by volumes.nas.cifs.shares.acls.type • Introduced in: 9.12
volumes.nas.cifs.shares.acls.permission	string	query	False	Filter by volumes.nas.cifs.shares.acls.permission • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.acls.user_or_group	string	query	False	Filter by volumes.nas.cifs.shares.acls.user_or_group • Introduced in: 9.12
volumes.nas.cifs.shares.acls.win_sid_unix_id	string	query	False	Filter by volumes.nas.cifs.shares.acls.win_sid_unix_id • Introduced in: 9.16
volumes.nas.cifs.shares.no_strict_security	boolean	query	False	Filter by volumes.nas.cifs.shares.no_strict_security • Introduced in: 9.12
volumes.nas.cifs.shares.unix_symlink	string	query	False	Filter by volumes.nas.cifs.shares.unix_symlink • Introduced in: 9.12
volumes.nas.cifs.shares.show_snapshot	boolean	query	False	Filter by volumes.nas.cifs.shares.show_snapshot • Introduced in: 9.12
volumes.nas.cifs.shares.change_notify	boolean	query	False	Filter by volumes.nas.cifs.shares.change_notify • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.offline_files	string	query	False	Filter by volumes.nas.cifs.shares.offline_files • Introduced in: 9.12
volumes.nas.cifs.shares.allow_unencrypted_access	boolean	query	False	Filter by volumes.nas.cifs.shares.allow_unencrypted_access • Introduced in: 9.12
volumes.nas.cifs.shares.home_directory	boolean	query	False	Filter by volumes.nas.cifs.shares.home_directory • Introduced in: 9.12
volumes.nas.cifs.shares.file_umask	integer	query	False	Filter by volumes.nas.cifs.shares.file_umask • Introduced in: 9.12
volumes.nas.cifs.shares.dir_umask	integer	query	False	Filter by volumes.nas.cifs.shares.dir_umask • Introduced in: 9.12
volumes.nas.cifs.shares.continuously_available	boolean	query	False	Filter by volumes.nas.cifs.shares.continuously_available • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.oplocks	boolean	query	False	Filter by volumes.nas.cifs.shares.oplocks • Introduced in: 9.12
volumes.nas.cifs.shares.namespace_caching	boolean	query	False	Filter by volumes.nas.cifs.shares.namespace_caching • Introduced in: 9.12
volumes.nas.cifs.shares.comment	string	query	False	Filter by volumes.nas.cifs.shares.comment • Introduced in: 9.12 • maxLength: 256 • minLength: 1
volumes.nas.cifs.shares.vscan_profile	string	query	False	Filter by volumes.nas.cifs.shares.vscan_profile • Introduced in: 9.12
volumes.nas.cifs.shares.encryption	boolean	query	False	Filter by volumes.nas.cifs.shares.encryption • Introduced in: 9.12
volumes.nas.path	string	query	False	Filter by volumes.nas.path • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.unix_permissions	integer	query	False	Filter by volumes.nas.unix_permissions • Introduced in: 9.12
volumes.nas.security_style	string	query	False	Filter by volumes.nas.security_style • Introduced in: 9.12
volumes.nas.gid	integer	query	False	Filter by volumes.nas.gid • Introduced in: 9.12
qos.policy.name	string	query	False	Filter by qos.policy.name
qos.policy.uuid	string	query	False	Filter by qos.policy.uuid
tiering.policy	string	query	False	Filter by tiering.policy
application.type	string	query	False	Filter by application.type • Introduced in: 9.12
application.component_type	string	query	False	Filter by application.component_type • Introduced in: 9.12
space.available	integer	query	False	Filter by space.available
space.size	integer	query	False	Filter by space.size
space.used	integer	query	False	Filter by space.used

Name	Type	In	Required	Description
parent_consistency_group.name	string	query	False	Filter by parent_consistency_group.name
parent_consistency_group.uuid	string	query	False	Filter by parent_consistency_group.uuid
consistency_groups.volumes.comment	string	query	False	Filter by consistency_groups.volumes.comment • maxLength: 1023 • minLength: 0
consistency_groups.volumes.qos.policy.name	string	query	False	Filter by consistency_groups.volumes.qos.policy.name
consistency_groups.volumes.qos.policy.uuid	string	query	False	Filter by consistency_groups.volumes.qos.policy.uuid
consistency_groups.volumes.space.size	integer	query	False	Filter by consistency_groups.volumes.space.size
consistency_groups.volumes.space.available	integer	query	False	Filter by consistency_groups.volumes.space.available
consistency_groups.volumes.space.used	integer	query	False	Filter by consistency_groups.volumes.space.used
consistency_groups.volumes.tiering.policy	string	query	False	Filter by consistency_groups.volumes.tiering.policy

Name	Type	In	Required	Description
consistency_groups.volumes.snapshot_policy.name	string	query	False	Filter by consistency_groups.volumes.snapshot_policy.name
consistency_groups.volumes.snapshot_policy.uuid	string	query	False	Filter by consistency_groups.volumes.snapshot_policy.uuid
consistency_groups.volumes.name	string	query	False	Filter by consistency_groups.volumes.name • maxLength: 203 • minLength: 1
consistency_groups.volumes.uuid	string	query	False	Filter by consistency_groups.volumes.uuid
consistency_groups.volumes.nas.uid	integer	query	False	Filter by consistency_groups.volumes.nas.uid • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.chown_mode	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.chown_mode • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.ntfs_unix_security	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.ntfs_unix_security • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.export_policy.rules.clients.match	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.clients.match • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.index	integer	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.index • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.superuser	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.superuser • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.rw_rule	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.rw_rule • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.allow_device_creation	boolean	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.allow_device_creation • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.export_policy.rules.anonymous_user	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.anonymous_user • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.ro_rule	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.ro_rule • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.allow_suid	boolean	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.allow_suid • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.protocols	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.protocols • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.id	integer	query	False	Filter by consistency_groups.volumes.nas.export_policy.id • Introduced in: 9.14
consistency_groups.volumes.nas.export_policy.name	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.name • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.junction_parent.name	string	query	False	Filter by consistency_groups.volumes.nas.junction_parent.name • Introduced in: 9.12
consistency_groups.volumes.nas.junction_parent.uuid	string	query	False	Filter by consistency_groups.volumes.nas.junction_parent.uuid • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.access_based_enumeration	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.access_based_enumeration • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.name	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.name • Introduced in: 9.12 • maxLength: 80 • minLength: 1
consistency_groups.volumes.nas.cifs.shares.acls.type	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.type • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.acls.permission	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.permission • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.acls.user_or_group	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.user_or_group • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.acls.win_sid_unix_id	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.win_sid_unix_id • Introduced in: 9.16
consistency_groups.volumes.nas.cifs.shares.no_strict_security	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.no_strict_security • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.unix_symlink	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.unix_symlink • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.show_snapshot	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.show_snapshot • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.change_notify	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.change_notify • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.offline_files	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.offline_files • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.allow_unencrypted_access	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.allow_unencrypted_access • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.home_directory	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.home_directory • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.file_umask	integer	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.file_umask • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.dir_umask	integer	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.dir_umask • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.continuously_available	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.continuously_available • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.oplocks	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.oplocks • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.namespace_caching	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.namespace_caching • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.comment	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.comment • Introduced in: 9.12 • maxLength: 256 • minLength: 1
consistency_groups.volumes.nas.cifs.shares.vscan_profile	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.vscan_profile • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.encryption	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.encryption • Introduced in: 9.12
consistency_groups.volumes.nas.path	string	query	False	Filter by consistency_groups.volumes.nas.path • Introduced in: 9.12
consistency_groups.volumes.nas.unix_permissions	integer	query	False	Filter by consistency_groups.volumes.nas.unix_permissions • Introduced in: 9.12
consistency_groups.volumes.nas.security_style	string	query	False	Filter by consistency_groups.volumes.nas.security_style • Introduced in: 9.12
consistency_groups.volumes.nas.gid	integer	query	False	Filter by consistency_groups.volumes.nas.gid • Introduced in: 9.12
consistency_groups.luns.space.size	integer	query	False	Filter by consistency_groups.luns.space.size • Max value: 140737488355328 • Min value: 4096

Name	Type	In	Required	Description
consistency_groups.luns.space.guarantee.requested	boolean	query	False	Filter by consistency_groups.luns.space.guarantee.requested • Introduced in: 9.11
consistency_groups.luns.space.guarantee.reserved	boolean	query	False	Filter by consistency_groups.luns.space.guarantee.reserved • Introduced in: 9.11
consistency_groups.luns.space.used	integer	query	False	Filter by consistency_groups.luns.space.used
consistency_groups.luns.create_time	string	query	False	Filter by consistency_groups.luns.create_time
consistency_groups.luns.name	string	query	False	Filter by consistency_groups.luns.name
consistency_groups.luns.comment	string	query	False	Filter by consistency_groups.luns.comment • maxLength: 254 • minLength: 0
consistency_groups.luns.qos.policy.max_throughput_iops	integer	query	False	Filter by consistency_groups.luns.qos.policy.max_throughput_iops • Max value: 2147483647 • Min value: 0

Name	Type	In	Required	Description
consistency_groups.luns.qos.policy.max_throughput_mbps	integer	query	False	Filter by consistency_groups.luns.qos.policy.max_throughput_mbps • Max value: 4194303 • Min value: 0
consistency_groups.luns.qos.policy.uuid	string	query	False	Filter by consistency_groups.luns.qos.policy.uuid
consistency_groups.luns.qos.policy.min_throughput_mbps	integer	query	False	Filter by consistency_groups.luns.qos.policy.min_throughput_mbps • Max value: 4194303 • Min value: 0
consistency_groups.luns.qos.policy.name	string	query	False	Filter by consistency_groups.luns.qos.policy.name
consistency_groups.luns.qos.policy.min_throughput_iops	integer	query	False	Filter by consistency_groups.luns.qos.policy.min_throughput_iops • Max value: 2147483647 • Min value: 0
consistency_groups.luns.lun_maps.logical_unit_number	integer	query	False	Filter by consistency_groups.luns.lun_maps.logical_unit_number
consistency_groups.luns.lun_maps.igroup.uuid	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.uuid

Name	Type	In	Required	Description
consistency_groups.luns.lun_maps.igroup.comment	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.comment • Introduced in: 9.11 • maxLength: 254 • minLength: 0
consistency_groups.luns.lun_maps.igroup.initiators.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.initiators.name
consistency_groups.luns.lun_maps.igroup.initiators.comment	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.initiators.comment • maxLength: 254 • minLength: 0
consistency_groups.luns.lun_maps.igroup.os_type	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.os_type
consistency_groups.luns.lun_maps.igroup.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.name • maxLength: 96 • minLength: 1
consistency_groups.luns.lun_maps.igroup.igroups.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.igroups.name • maxLength: 96 • minLength: 1

Name	Type	In	Required	Description
consistency_groups.luns.lun_maps.igroup.igroups.uuid	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.igroups.uuid
consistency_groups.luns.lun_maps.igroup.protocol	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.protocol
consistency_groups.luns.enabled	boolean	query	False	Filter by consistency_groups.luns.enabled
consistency_groups.luns.os_type	string	query	False	Filter by consistency_groups.luns.os_type
consistency_groups.luns.serial_number	string	query	False	Filter by consistency_groups.luns.serial_number • maxLength: 12 • minLength: 12
consistency_groups.luns.uuid	string	query	False	Filter by consistency_groups.luns.uuid
consistency_groups.tiering.policy	string	query	False	Filter by consistency_groups.tiering.policy
consistency_groups.application.type	string	query	False	Filter by consistency_groups.application.type • Introduced in: 9.12
consistency_groups.application.component_type	string	query	False	Filter by consistency_groups.application.component_type • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.space.available	integer	query	False	Filter by consistency_groups.space.available
consistency_groups.space.size	integer	query	False	Filter by consistency_groups.space.size
consistency_groups.space.used	integer	query	False	Filter by consistency_groups.space.used
consistency_groups.parent_consistency_group.name	string	query	False	Filter by consistency_groups.parent_consistency_group.name
consistency_groups.parent_consistency_group.uuid	string	query	False	Filter by consistency_groups.parent_consistency_group.uuid
consistency_groups.qos.policy.name	string	query	False	Filter by consistency_groups.qos.policy.name
consistency_groups.qos.policy.uuid	string	query	False	Filter by consistency_groups.qos.policy.uuid
consistency_groups.svm.name	string	query	False	Filter by consistency_groups.svm.name
consistency_groups.svm.uuid	string	query	False	Filter by consistency_groups.svm.uuid
consistency_groups.uuid	string	query	False	Filter by consistency_groups.uuid
consistency_groups.snapshot_policy.name	string	query	False	Filter by consistency_groups.snapshot_policy.name

Name	Type	In	Required	Description
consistency_groups.snapshot_policy.uuid	string	query	False	Filter by consistency_groups.snapshot_policy.uuid
consistency_groups.name	string	query	False	Filter by consistency_groups.name
consistency_groups._tags	string	query	False	Filter by consistency_groups._tags • Introduced in: 9.15
consistency_groups.namespaces.comment	string	query	False	Filter by consistency_groups.namespaces.comment • Introduced in: 9.12 • maxLength: 254 • minLength: 0
consistency_groups.namespaces.subsystem_map.subsystem.comment	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.comment • Introduced in: 9.12 • maxLength: 255 • minLength: 0
consistency_groups.namespaces.subsystem_map.subsystem.uuid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.uuid • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.os_type	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.os_type • Introduced in: 9.12
consistency_groups.namespaces.subsystem_map.subsystem.name	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.name • Introduced in: 9.12 • maxLength: 64 • minLength: 1
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode • Introduced in: 9.16

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.hosts.tls.key_type	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.tls.key_type • Introduced in: 9.16
consistency_groups.namespaces.subsystem_map.subsystem.hosts.nqn	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.nqn • Introduced in: 9.12
consistency_groups.namespaces.subsystem_map.subsystem.hosts.priority	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.priority • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid • Introduced in: 9.17
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name • Introduced in: 9.17

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.local_svm	boolean	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.local_svm • Introduced in: 9.17
consistency_groups.namespaces.subsystem_map.nsid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.nsid • Introduced in: 9.12
consistency_groups.namespaces.subsystem_map.anagrpid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.anagrpid • Introduced in: 9.12
consistency_groups.namespaces.space.size	integer	query	False	Filter by consistency_groups.namespaces.space.size • Introduced in: 9.12 • Max value: 140737488355328 • Min value: 4096
consistency_groups.namespaces.space.guarantee.requested	boolean	query	False	Filter by consistency_groups.namespaces.space.guarantee.requested • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.space.guarantee.reserved	boolean	query	False	Filter by consistency_groups.namespaces.space.guarantee.reserved • Introduced in: 9.12
consistency_groups.namespaces.space.block_size	integer	query	False	Filter by consistency_groups.namespaces.space.block_size • Introduced in: 9.12
consistency_groups.namespaces.space.used	integer	query	False	Filter by consistency_groups.namespaces.space.used • Introduced in: 9.12
consistency_groups.namespaces.create_time	string	query	False	Filter by consistency_groups.namespaces.create_time • Introduced in: 9.12
consistency_groups.namespaces.name	string	query	False	Filter by consistency_groups.namespaces.name • Introduced in: 9.12
consistency_groups.namespaces.uuid	string	query	False	Filter by consistency_groups.namespaces.uuid • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.status.read_only	boolean	query	False	Filter by consistency_groups.namespaces.status.read_only • Introduced in: 9.12
consistency_groups.namespaces.status.state	string	query	False	Filter by consistency_groups.namespaces.status.state • Introduced in: 9.12
consistency_groups.namespaces.status.mapped	boolean	query	False	Filter by consistency_groups.namespaces.status.mapped • Introduced in: 9.12
consistency_groups.namespaces.status.container_state	string	query	False	Filter by consistency_groups.namespaces.status.container_state • Introduced in: 9.12
consistency_groups.namespaces.auto_delete	boolean	query	False	Filter by consistency_groups.namespaces.auto_delete • Introduced in: 9.12
consistency_groups.namespaces.enabled	boolean	query	False	Filter by consistency_groups.namespaces.enabled • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.os_type	string	query	False	Filter by consistency_groups.namespaces.os_type • Introduced in: 9.12
replication_relationships.uuid	string	query	False	Filter by replication_relationships.uuid • Introduced in: 9.13
replication_relationships.is_source	boolean	query	False	Filter by replication_relationships.is_source • Introduced in: 9.13
replication_relationships.is_protected_by_svm_dr	boolean	query	False	Filter by replication_relationships.is_protected_by_svm_dr • Introduced in: 9.14
clone.split_estimate	integer	query	False	Filter by clone.split_estimate • Introduced in: 9.15
clone.parent_svm.name	string	query	False	Filter by clone.parent_svm.name • Introduced in: 9.15
clone.parent_svm.uuid	string	query	False	Filter by clone.parent_svm.uuid • Introduced in: 9.15

Name	Type	In	Required	Description
clone.split_initiated	boolean	query	False	Filter by clone.split_initiated • Introduced in: 9.12
clone.guarantee.type	string	query	False	Filter by clone.guarantee.type • Introduced in: 9.12
clone.is_flexclone	boolean	query	False	Filter by clone.is_flexclone • Introduced in: 9.15
clone.parent_consistency_group.uuid	string	query	False	Filter by clone.parent_consistency_group.uuid • Introduced in: 9.12
clone.parent_consistency_group.name	string	query	False	Filter by clone.parent_consistency_group.name • Introduced in: 9.12
clone.parent_snapshot.name	string	query	False	Filter by clone.parent_snapshot.name • Introduced in: 9.12
clone.parent_snapshot.uuid	string	query	False	Filter by clone.parent_snapshot.uuid • Introduced in: 9.15

Name	Type	In	Required	Description
clone.volume.prefix	string	query	False	Filter by clone.volume.prefix • Introduced in: 9.12
clone.volume.suffix	string	query	False	Filter by clone.volume.suffix • Introduced in: 9.12
clone.split_complete_percent	integer	query	False	Filter by clone.split_complete_percent • Introduced in: 9.15
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "application": {
        "component_type": "string",
        "type": "string"
      },
      "clone": {
        "guarantee": {
          "type": "string"
        },
        "parent_consistency_group": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string",
          "uuid": "string"
        },
        "parent_snapshot": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
```

```
          "name": "this_snapshot",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "parent_svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "split_complete_percent": 0,
        "split_estimate": 0,
        "volume": {
          "prefix": "string",
          "suffix": "string"
        }
      },
      "consistency_groups": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "_tags": [
            "team:csi",
            "environment:test"
          ],
          "application": {
            "component_type": "string",
            "type": "string"
          },
          "luns": [
            {
              "comment": "string",
              "create_time": "2018-06-04 15:00:00 -0400",
              "lun_maps": [
                {
                  "igroup": {
                    "comment": "string",
                    "igroups": [
                      {
                        "_links": {
                          "self": {
```

```
                        "href": "/api/resourcelink"
                      }
                    },
                    "name": "igroup1",
                    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
                  }
                ],
                "initiators": [
                  {
                    "comment": "my comment",
                    "name": "iqn.1998-01.com.corp.iscsi:name1"
                  }
                ],
                "name": "igroup1",
                "os_type": "string",
                "protocol": "string",
                "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
              }
            }
          ],
          "name": "/vol/volume1/lun1",
          "os_type": "string",
          "qos": {
            "policy": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "max_throughput_iops": 10000,
              "max_throughput_mbps": 500,
              "min_throughput_iops": 2000,
              "min_throughput_mbps": 500,
              "name": "performance",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "serial_number": "string",
          "space": {
            "size": 1073741824,
            "used": 0
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "name": "string",
```

```
          "namespaces": [
            {
              "comment": "string",
              "create_time": "2018-06-04 15:00:00 -0400",
              "name": "/vol/volume1/qtree1/namespace1",
              "os_type": "string",
              "space": {
                "block_size": 512,
                "size": 1073741824,
                "used": 0
              },
              "status": {
                "container_state": "string",
                "state": "online"
              },
              "subsystem_map": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "anagrpid": "00103050h",
                "nsid": "00000001h",
                "subsystem": {
                  "comment": "string",
                  "hosts": [
                    {
                      "dh_hmac_chap": {
                        "group_size": "string",
                        "hash_function": "string",
                        "mode": "bidirectional"
                      },
                      "nqn": "nqn.1992-01.example.com:string",
                      "priority": "string",
                      "proximity": {
                        "peer_svms": [
                          {
                            "_links": {
                              "self": {
                                "href": "/api/resourcelink"
                              }
                            },
                            "name": "peer1",
                            "uuid": "4204cf77-4c82-9bdb-5644-
b5a841c097a9"
                          }
```

```
                    ]
                  },
                  "tls": {
                    "key_type": "configured"
                  }
                }
              ],
              "name": "subsystem1",
              "os_type": "string",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "parent_consistency_group": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "my_consistency_group",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "qos": {
        "policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "restore_to": {
        "snapshot": {
          "name": "string",
          "uuid": "string"
        }
      },
      "snapshot_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
            },
            "name": "default",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "space": {
            "available": 5737418,
            "size": 1073741824,
            "used": 5737418
          },
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          },
          "tiering": {
            "object_stores": [
              {}
            ],
            "policy": "string"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
          "volumes": [
            {
              "comment": "string",
              "name": "vol_cs_dept",
              "nas": {
                "cifs": {
                  "shares": [
                    {
                      "_links": {
                        "self": {
                          "href": "/api/resourcelink"
                        }
                      },
                      "acls": [
                        {
                          "_links": {
                            "self": {
                              "href": "/api/resourcelink"
                            }
                          },
                          "permission": "string",
```

```
                "type": "string",
                "user_or_group": "ENGDOMAIN\\ad_user",
                "win_sid_unix_id": "string"
              }
            ],
            "comment": "HR Department Share",
            "dir_umask": 18,
            "file_umask": 18,
            "name": "HR_SHARE",
            "offline_files": "string",
            "unix_symlink": "string",
            "vscan_profile": "string"
          }
        ]
      },
      "export_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 0,
        "name": "string",
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "anonymous_user": "string",
            "chown_mode": "string",
            "clients": [
              {
                "match": "0.0.0.0/0"
              }
            ],
            "ntfs_unix_security": "string",
            "protocols": [
              "string"
            ],
            "ro_rule": [
              "string"
            ],
            "rw_rule": [
              "string"
```

```
                ],
                "superuser": [
                  "string"
                ]
              }
            ]
          },
          "junction_parent": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "vs1_root",
            "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
          },
          "path": "/user/my_volume",
          "security_style": "string",
          "unix_permissions": 493
        },
        "qos": {
          "policy": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "snapshot_policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "space": {
          "available": 0,
          "used": 0
        },
        "tiering": {
          "object_stores": [
```

```
                {}
              ],
              "policy": "string"
            },
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        ]
      }
    ],
    "luns": [
      {
        "comment": "string",
        "create_time": "2018-06-04 15:00:00 -0400",
        "lun_maps": [
          {
            "igroup": {
              "comment": "string",
              "igroups": [
                {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "name": "igroup1",
                  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
                }
              ],
              "initiators": [
                {
                  "comment": "my comment",
                  "name": "iqn.1998-01.com.corp.iscsi:name1"
                }
              ],
              "name": "igroup1",
              "os_type": "string",
              "protocol": "string",
              "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ],
        "name": "/vol/volume1/lun1",
        "os_type": "string",
        "qos": {
          "policy": {
            "_links": {
```

```
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "max_throughput_iops": 10000,
              "max_throughput_mbps": 500,
              "min_throughput_iops": 2000,
              "min_throughput_mbps": 500,
              "name": "performance",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "serial_number": "string",
          "space": {
            "size": 1073741824,
            "used": 0
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "available_space": 4096,
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "size": 4096,
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500",
```

```
        "used_space": 4096
      },
      "name": "string",
      "namespaces": [
        {
          "comment": "string",
          "create_time": "2018-06-04 15:00:00 -0400",
          "name": "/vol/volume1/qtree1/namespace1",
          "os_type": "string",
          "space": {
            "block_size": 512,
            "size": 1073741824,
            "used": 0
          },
          "status": {
            "container_state": "string",
            "state": "online"
          },
          "subsystem_map": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "anagrpid": "00103050h",
            "nsid": "00000001h",
            "subsystem": {
              "comment": "string",
              "hosts": [
                {
                  "dh_hmac_chap": {
                    "group_size": "string",
                    "hash_function": "string",
                    "mode": "bidirectional"
                  },
                  "nqn": "nqn.1992-01.example.com:string",
                  "priority": "string",
                  "proximity": {
                    "peer_svms": [
                      {
                        "_links": {
                          "self": {
                            "href": "/api/resourcelink"
                          }
                        },
                        "name": "peer1",
```

```
                        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                      }
                    ]
                  },
                  "tls": {
                    "key_type": "configured"
                  }
                }
              ],
              "name": "subsystem1",
              "os_type": "string",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "parent_consistency_group": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "my_consistency_group",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "qos": {
        "policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "replication_relationships": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
```

```
      ],
      "restore_to": {
        "snapshot": {
          "name": "string",
          "uuid": "string"
        }
      },
      "snapshot_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "space": {
        "available": 5737418,
        "size": 1073741824,
        "used": 5737418
      },
      "statistics": {
        "available_space": 4096,
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "size": 4096,
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500",
        "used_space": 4096
      },
      "svm": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tiering": {
        "object_stores": [
          {}
        ],
        "policy": "string"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vdisk_type": "luns",
      "volumes": [
        {
          "comment": "string",
          "name": "vol_cs_dept",
          "nas": {
            "cifs": {
              "shares": [
                {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "acls": [
                    {
                      "_links": {
                        "self": {
                          "href": "/api/resourcelink"
                        }
                      },
                      "permission": "string",
                      "type": "string",
                      "user_or_group": "ENGDOMAIN\\ad_user",
                      "win_sid_unix_id": "string"
                    }
                  ],
                  "comment": "HR Department Share",
                  "dir_umask": 18,
                  "file_umask": 18,
                  "name": "HR_SHARE",
                  "offline_files": "string",
                  "unix_symlink": "string",
```

```
                "vscan_profile": "string"
              }
            ]
          },
          "export_policy": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "id": 0,
            "name": "string",
            "rules": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "anonymous_user": "string",
                "chown_mode": "string",
                "clients": [
                  {
                    "match": "0.0.0.0/0"
                  }
                ],
                "ntfs_unix_security": "string",
                "protocols": [
                  "string"
                ],
                "ro_rule": [
                  "string"
                ],
                "rw_rule": [
                  "string"
                ],
                "superuser": [
                  "string"
                ]
              }
            ]
          },
          "junction_parent": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
```

```
                }
              },
              "name": "vs1_root",
              "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
            },
            "path": "/user/my_volume",
            "security_style": "string",
            "unix_permissions": 493
          },
          "qos": {
            "policy": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "performance",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "snapshot_policy": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "default",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "space": {
            "available": 0,
            "used": 0
          },
          "tiering": {
            "object_stores": [
              {}
            ],
            "policy": "string"
          },
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ]
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

application

Name	Type	Description
component_type	string	Nested consistency group tag.
type	string	Top level consistency group tag.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

parent_consistency_group

Consistency group that is to be cloned.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

Name	Type	Description
self	href	

parent_snapshot

Consistency group that is to be cloned.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume name suffix/prefix for the cloned volumes.

Name	Type	Description
prefix	string	Volume name prefix for cloned volumes.
suffix	string	Volume name suffix for cloned volumes.

clone

Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
guarantee	guarantee	

Name	Type	Description
is_flexclone	boolean	Specifies if this consistency group is a FlexClone of a consistency group.
parent_consistency_group	parent_consistency_group	Consistency group that is to be cloned.
parent_snapshot	parent_snapshot	Consistency group that is to be cloned.
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
split_complete_percent	integer	Percentage of FlexClone blocks split from its parent consistency group.
split_estimate	integer	Space required to split the FlexClone consistency group.
split_initiated	boolean	Splits volumes after cloning. Defaults to false during POST. Only accepts true during a PATCH.
volume	volume	Volume name suffix/prefix for the cloned volumes.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

igroups

Name	Type	Description
_links	self_link	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.

Name	Type	Description
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

policy

The QoS policy

Name	Type	Description
_links	self_link	
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

Name	Type	Description
policy	policy	The QoS policy

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform, and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

luns

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the LUN was created.
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, you can consult the `state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
lun_maps	array[lun_maps]	An array of LUN maps. A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.
name	string	The fully qualified path name of the LUN composed of the "/vol" prefix, the volume name, the qtree name (optional), and the base name of the LUN. Valid in POST and PATCH.

Name	Type	Description
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
qos	qos	
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
space	space	The storage space related properties of the LUN.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace, in bytes. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.

Name	Type	Description
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

consistency_group_nvme_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

consistency_group_nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.

Name	Type	Description
hosts	array[consistency_group_nvme_host]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`.
They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.

Name	Type	Description
_links	self_link	
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	consistency_group_nvme_subsystem	An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

namespaces

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.

Name	Type	Description
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.
space	space	The storage space related properties of the NVMe namespace.
status	status	Status information about the NVMe namespace.
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.
uuid	string	The unique identifier of the NVMe namespace.

parent_consistency_group

The parent consistency group.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

storage_service

Determines the placement of any storage object created during this operation.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
name	string	New name for consistency group. Required to resolve naming collisions.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

policy

The QoS policy

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot

A consistency group's snapshot

Name	Type	Description
name	string	The name of the consistency group's snapshot to restore to.
uuid	string	The UUID of the consistency group's snapshot to restore to.

restore_to

Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot	snapshot	A consistency group's snapshot

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

space

Space information for the consistency group.

Name	Type	Description
available	integer	The amount of space available in the consistency group, in bytes.
size	integer	The total provisioned size of the consistency group, in bytes.
used	integer	The amount of space consumed in the consistency group, in bytes.

svm

The Storage Virtual Machine (SVM) in which the consistency group is located.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

object_stores

tiering

The tiering placement and policy definitions for volumes in this consistency group.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
_links	_links	

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.
win_sid_unix_id	string	Windows SID/UNIX ID depending on access-control type.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
_links	_links	

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	integer	File mode creation mask to be viewed as an octal number.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: • Introduced in: 9.12 • readCreate: 1 • x-nullable: true

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

cifs

Name	Type	Description
shares	array[consistency_group_cifs_share]	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.

Name	Type	Description
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

export_policy

The policy associated with volumes to export them for protocol access.

Name	Type	Description
_links	self_link	
id	integer	Identifier for the export policy.
name	string	Name of the export policy.
rules	array[export_rules]	The set of rules that govern the export policy.

junction_parent

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.
uuid	string	Unique identifier for the parent volume.

nas

The CIFS share policy and/or export policies for this volume.

Name	Type	Description
cifs	cifs	
export_policy	export_policy	The policy associated with volumes to export them for protocol access.
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within an SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.

Name	Type	Description
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ UNIX-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.
unix_permissions	integer	UNIX permissions to be viewed as an octal number, consisting of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). First digit selects the set user ID (4), set group ID (2), and sticky (1) attributes. Second digit selects permission for the owner of the file. Third selects permissions for other users in the same group while the fourth selects permissions for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group, and other permissions are given (as in 755, representing the second, third and fourth digit), the first digit is assumed to be zero.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

Name	Type	Description
storage_service	storage_service	Determines the placement of any storage object created during this operation.

qos

The QoS policy for this volume.

Name	Type	Description
policy	policy	The QoS policy

space

Name	Type	Description
available	integer	The available space, in bytes.
size	integer	Total provisioned size, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.

tiering

The tiering placement and policy definitions for this volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

volumes

Name	Type	Description
comment	string	A comment for the volume. Valid in POST or PATCH.

Name	Type	Description
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	The CIFS share policy and/or export policies for this volume.
qos	qos	The QoS policy for this volume.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	
tiering	tiering	The tiering placement and policy definitions for this volume.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.8 • x-nullable: true

consistency_groups

Name	Type	Description
_links	self_link	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.

Name	Type	Description
application	application	
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
qos	qos	
restore_to	restore_to	Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	Space information for the consistency group.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency observed at the storage object, in microseconds.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.

Name	Type	Description
_links	_links	
available_space	integer	The total space available in the consistency group, in bytes.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency observed at the storage object, in microseconds.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance and capacity data.
used_space	integer	The total space used in the consistency group, in bytes.

replication_relationships

Name	Type	Description
_links	self_link	
is_protected_by_svm_dr	boolean	Indicates whether or not this consistency group is protected by SVM DR.
is_source	boolean	Indicates whether or not this consistency group is the source for replication.

Name	Type	Description
uuid	string	The unique identifier of the SnapMirror relationship.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.
used_space	integer	The total used space in the consistency group, in bytes.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
_links	_links	

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	integer	File mode creation mask to be viewed as an octal number.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

records

Name	Type	Description
_links	self_link	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	

Name	Type	Description
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
metric	metric	Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
qos	qos	

Name	Type	Description
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	Space information for the consistency group.
statistics	statistics	These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.

Name	Type	Description
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
vdisk_type	string	Type of objects in the consistency group.
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a consistency group

POST `/application/consistency-groups`

Introduced In: 9.10

Creates a consistency group with one or more consistency groups having:

- new SAN volumes,
- existing SAN, NVMe or NAS FlexVol volumes in a new or existing consistency group

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the group.
- `volumes`
- `luns` or `namespaces`

Naming Conventions

Consistency groups

- name or consistency_groups[].name, if specified
- derived from volumes[0].name, if only one volume is specified, same as volume name

Volume

- volumes[].name, if specified
- derived from volume prefix in luns[].name
- derived from cg[].name, suffixed by "_#" where "#" is a system generated unique number
- suffixed by "_#" where "#" is a system generated unique number, if provisioning_options.count is provided

LUN

- luns[].name, if specified
- derived from volumes[].name, suffixed by "_#" where "#" is a system generated unique number
- suffixed by "_#" where "#" is a system generated unique number, if provisioning_options.count is provided

NVMe Namespace

- namespaces[].name, if specified
- derived from volumes[].name, suffixed by "_#" where "#" is a system generated unique number
- suffixed by "_#" where "#" is a system generated unique number, if provisioning_options.count is provided

Related ONTAP commands

- `vserver consistency-group create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.

Name	Type	Description
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
vdisk_type	string	Type of objects in the consistency group.

Name	Type	Description
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "application": {
    "component_type": "string",
    "type": "string"
  },
  "clone": {
    "guarantee": {
      "type": "string"
    },
    "parent_consistency_group": {
      "name": "string",
      "uuid": "string"
    },
    "parent_snapshot": {
      "name": "this_snapshot",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "parent_svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "split_complete_percent": 0,
    "split_estimate": 0,
    "volume": {
      "prefix": "string",
      "suffix": "string"
    }
  },
  "consistency_groups": [
    {
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "application": {
        "component_type": "string",
        "type": "string"
      },
      "luns": [
        {
```

```
        "clone": {
          "source": {
            "name": "/vol/volume1/lun1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "comment": "string",
        "create_time": "2018-06-04 15:00:00 -0400",
        "lun_maps": [
          {
            "igroup": {
              "comment": "string",
              "igroups": [
                {
                  "name": "igroup1",
                  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
                }
              ],
              "initiators": [
                {
                  "comment": "my comment",
                  "name": "iqn.1998-01.com.corp.iscsi:name1"
                }
              ],
              "name": "igroup1",
              "os_type": "string",
              "protocol": "string",
              "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ],
        "name": "/vol/volume1/lun1",
        "os_type": "string",
        "provisioning_options": {
          "action": "string"
        },
        "qos": {
          "policy": {
            "max_throughput_iops": 10000,
            "max_throughput_mbps": 500,
            "min_throughput_iops": 2000,
            "min_throughput_mbps": 500,
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
```

```
          "serial_number": "string",
          "space": {
            "size": 1073741824,
            "used": 0
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "name": "string",
      "namespaces": [
        {
          "comment": "string",
          "create_time": "2018-06-04 15:00:00 -0400",
          "name": "/vol/volume1/qtree1/namespace1",
          "os_type": "string",
          "provisioning_options": {
            "action": "string"
          },
          "space": {
            "block_size": 512,
            "size": 1073741824,
            "used": 0
          },
          "subsystem_map": {
            "anagrpid": "00103050h",
            "nsid": "00000001h",
            "subsystem": {
              "comment": "string",
              "hosts": [
                {
                  "dh_hmac_chap": {
                    "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
                    "group_size": "string",
                    "hash_function": "string",
                    "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
                    "mode": "bidirectional"
                  },
                  "nqn": "nqn.1992-01.example.com:string",
                  "priority": "string",
                  "proximity": {
                    "peer_svms": [
                      {
                        "name": "peer1",
                        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
```

```
                        }
                      ]
                    },
                    "tls": {
                      "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
                      "key_type": "configured"
                    }
                  }
                ],
                "name": "subsystem1",
                "os_type": "string",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "parent_consistency_group": {
          "name": "my_consistency_group",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "provisioning_options": {
          "action": "string",
          "name": "string",
          "storage_service": {
            "name": "string"
          }
        },
        "qos": {
          "policy": {
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "restore_to": {
          "snapshot": {
            "name": "string",
            "uuid": "string"
          }
        },
        "snapshot_policy": {
          "name": "default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "svm": {
```

```
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tiering": {
        "control": "string",
        "object_stores": [
          {
            "name": "string"
          }
        ],
        "policy": "string"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "volumes": [
        {
          "comment": "string",
          "name": "vol_cs_dept",
          "nas": {
            "cifs": {
              "shares": [
                {
                  "acls": [
                    {
                      "permission": "string",
                      "type": "string",
                      "user_or_group": "ENGDOMAIN\\ad_user"
                    }
                  ],
                  "comment": "HR Department Share",
                  "dir_umask": 18,
                  "file_umask": 18,
                  "name": "HR_SHARE",
                  "offline_files": "string",
                  "unix_symlink": "string",
                  "vscan_profile": "string"
                }
              ]
            },
            "export_policy": {
              "id": 0,
              "name": "string",
              "rules": [
                {
                  "anonymous_user": "string",
                  "chown_mode": "string",
                  "clients": [
```

```
                {
                  "match": "0.0.0.0/0"
                }
              ],
              "ntfs_unix_security": "string",
              "protocols": [
                "string"
              ],
              "ro_rule": [
                "string"
              ],
              "rw_rule": [
                "string"
              ],
              "superuser": [
                "string"
              ]
            }
          ]
        },
        "junction_parent": {
          "name": "vs1_root",
          "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
        },
        "path": "/user/my_volume",
        "security_style": "string",
        "unix_permissions": 493
      },
      "provisioning_options": {
        "action": "string",
        "storage_service": {
          "name": "string"
        }
      },
      "qos": {
        "policy": {
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "snapshot_policy": {
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "space": {
        "available": 0,
```

```
            "used": 0
          },
          "tiering": {
            "control": "string",
            "object_stores": [
              {
                "name": "string"
              }
            ],
            "policy": "string"
          },
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ]
    }
  ],
  "luns": [
    {
      "clone": {
        "source": {
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "comment": "string",
      "create_time": "2018-06-04 15:00:00 -0400",
      "lun_maps": [
        {
          "igroup": {
            "comment": "string",
            "igroups": [
              {
                "name": "igroup1",
                "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
              }
            ],
            "initiators": [
              {
                "comment": "my comment",
                "name": "iqn.1998-01.com.corp.iscsi:name1"
              }
            ],
            "name": "igroup1",
            "os_type": "string",
            "protocol": "string",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
```

```
          }
        }
      ],
      "name": "/vol/volume1/lun1",
      "os_type": "string",
      "provisioning_options": {
        "action": "string"
      },
      "qos": {
        "policy": {
          "max_throughput_iops": 10000,
          "max_throughput_mbps": 500,
          "min_throughput_iops": 2000,
          "min_throughput_mbps": 500,
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "serial_number": "string",
      "space": {
        "size": 1073741824,
        "used": 0
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "name": "string",
  "namespaces": [
    {
      "comment": "string",
      "create_time": "2018-06-04 15:00:00 -0400",
      "name": "/vol/volume1/qtree1/namespace1",
      "os_type": "string",
      "provisioning_options": {
        "action": "string"
      },
      "space": {
        "block_size": 512,
        "size": 1073741824,
        "used": 0
      },
      "subsystem_map": {
        "anagrpid": "00103050h",
        "nsid": "00000001h",
        "subsystem": {
          "comment": "string",
```

```
          "hosts": [
            {
              "dh_hmac_chap": {
                "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
                "group_size": "string",
                "hash_function": "string",
                "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
                "mode": "bidirectional"
              },
              "nqn": "nqn.1992-01.example.com:string",
              "priority": "string",
              "proximity": {
                "peer_svms": [
                  {
                    "name": "peer1",
                    "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                  }
                ]
              },
              "tls": {
                "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
                "key_type": "configured"
              }
            }
          ],
          "name": "subsystem1",
          "os_type": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "parent_consistency_group": {
    "name": "my_consistency_group",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "provisioning_options": {
    "action": "string",
    "name": "string",
    "storage_service": {
      "name": "string"
    }
```

```
  },
  "qos": {
    "policy": {
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "replication_relationships": [
    {
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "restore_to": {
    "snapshot": {
      "name": "string",
      "uuid": "string"
    }
  },
  "snapshot_policy": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tiering": {
    "control": "string",
    "object_stores": [
      {
        "name": "string"
      }
    ],
    "policy": "string"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vdisk_type": "luns",
  "volumes": [
    {
      "comment": "string",
      "name": "vol_cs_dept",
      "nas": {
        "cifs": {
          "shares": [
            {
              "acls": [
```

```
                {
                  "permission": "string",
                  "type": "string",
                  "user_or_group": "ENGDOMAIN\\ad_user"
                }
              ],
              "comment": "HR Department Share",
              "dir_umask": 18,
              "file_umask": 18,
              "name": "HR_SHARE",
              "offline_files": "string",
              "unix_symlink": "string",
              "vscan_profile": "string"
            }
          ]
        },
        "export_policy": {
          "id": 0,
          "name": "string",
          "rules": [
            {
              "anonymous_user": "string",
              "chown_mode": "string",
              "clients": [
                {
                  "match": "0.0.0.0/0"
                }
              ],
              "ntfs_unix_security": "string",
              "protocols": [
                "string"
              ],
              "ro_rule": [
                "string"
              ],
              "rw_rule": [
                "string"
              ],
              "superuser": [
                "string"
              ]
            }
          ]
        },
        "junction_parent": {
          "name": "vs1_root",
```

```
            "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
          },
          "path": "/user/my_volume",
          "security_style": "string",
          "unix_permissions": 493
        },
        "provisioning_options": {
          "action": "string",
          "storage_service": {
            "name": "string"
          }
        },
        "qos": {
          "policy": {
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "snapshot_policy": {
          "name": "default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "space": {
          "available": 0,
          "used": 0
        },
        "tiering": {
          "control": "string",
          "object_stores": [
            {
              "name": "string"
            }
          ],
          "policy": "string"
        },
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    ]
  }
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374127	The specified LUN name is invalid.
5376461	The specified name is invalid because it does not match the format requirements.
5440501	The specified storage unit size is insufficient.
5440509	No suitable storage can be found for the specified requirements.
53411842	Consistency group does not exist.
53411843	A consistency group with specified UUID was not found.

Error Code	Description
53411844	Specified consistency group was not found in the specified SVM.
53411845	The specified UUID and name refer to different consistency groups.
53411846	Either name or UUID must be provided.
53411853	Fields provided in the request conflict with each other.
53411856	The provided field is only supported when provisioning new objects.
53411860	An object with the same identifier in the same scope exists.
53411861	The specified volume does not exist in provided volume array.
53411862	Modifying existing igroups is not supported using this API.
53411864	Request content insufficient to add an existing volume to an application.
53411865	Volumes contained in one consistency group cannot be added to a different consistency group.
53411866	LUNs are not supported on FlexGroup volumes.
53411867	LUN name is too long after appending a unique suffix.
53411869	Volume name is too long after appending a unique suffix.
53411870	When using the "round_robin" layout, the volume count must not be greater than the LUN count.
53411959	Volumes with snapshot locking enabled cannot be added to a consistency group.
53412040	Splitting a non-SnapLock clone from a Snaplock consistency group during clone creation is not supported.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

application

Name	Type	Description
component_type	string	Nested consistency group tag.
type	string	Top level consistency group tag.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

parent_consistency_group

Consistency group that is to be cloned.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

parent_snapshot

Consistency group that is to be cloned.

Name	Type	Description
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume name suffix/prefix for the cloned volumes.

Name	Type	Description
prefix	string	Volume name prefix for cloned volumes.
suffix	string	Volume name suffix for cloned volumes.

clone

Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
guarantee	guarantee	
is_flexclone	boolean	Specifies if this consistency group is a FlexClone of a consistency group.
parent_consistency_group	parent_consistency_group	Consistency group that is to be cloned.
parent_snapshot	parent_snapshot	Consistency group that is to be cloned.
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
split_complete_percent	integer	Percentage of FlexClone blocks split from its parent consistency group.
split_estimate	integer	Space required to split the FlexClone consistency group.

Name	Type	Description
split_initiated	boolean	Splits volumes after cloning. Defaults to false during POST. Only accepts true during a PATCH.
volume	volume	Volume name suffix/prefix for the cloned volumes.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.
uuid	string	The unique identifier of the clone source LUN. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

Name	Type	Description
source	source	The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN. Valid in POST to create a new LUN as a clone of the source. Valid in PATCH to overwrite an existing LUN's data as a clone of another.

igroups

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.

Name	Type	Description
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

policy

The QoS policy

Name	Type	Description
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

Name	Type	Description
policy	policy	The QoS policy

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform, and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

luns

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, you can consult the `state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
lun_maps	array[lun_maps]	An array of LUN maps. A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.
name	string	The fully qualified path name of the LUN composed of the "/vol" prefix, the volume name, the qtree name (optional), and the base name of the LUN. Valid in POST and PATCH.
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
space	space	The storage space related properties of the LUN.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace, in bytes. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.

Name	Type	Description
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
controller_secret_key	string	The controller secret for NVMe in-band authentication. The value of this property is used by the NVMe host to authenticate the NVMe controller while establishing a connection. If unset, the controller is not authenticated. When supplied, the property `host_secret_key` must also be supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a controller secret has been set for the host, but the controller secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
host_secret_key	string	The host secret for NVMe in-band authentication. The value of this property is used by the NVMe controller to authenticate the NVMe host while establishing a connection. If unset, no authentication is performed by the host or controller. This property must be supplied if any other NVMe in-band authentication properties are supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a host secret has been set for the host, but the host secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.

Name	Type	Description
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
configured_psk	string	A user supplied pre-shared key (PSK) value in PSK Interchange Format. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. This property is only allowed when `key_type` is `configured`. If `configured_psk` is supplied and `key_type` is unset, `key_type` defaults to `configured`. This property is write-only. The `key_type` property can be used to identify if a configured PSK has been set for the host, but the PSK value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

consistency_group_nvme_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

consistency_group_nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
hosts	array[consistency_group_nvme_host]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.

Name	Type	Description
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	consistency_group_nvme_subsystem	An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

namespaces

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
space	space	The storage space related properties of the NVMe namespace.

Name	Type	Description
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.
uuid	string	The unique identifier of the NVMe namespace.

parent_consistency_group

The parent consistency group.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

storage_service

Determines the placement of any storage object created during this operation.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform

Name	Type	Description
name	string	New name for consistency group. Required to resolve naming collisions.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

policy

The QoS policy

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot

A consistency group's snapshot

Name	Type	Description
name	string	The name of the consistency group's snapshot to restore to.
uuid	string	The UUID of the consistency group's snapshot to restore to.

restore_to

Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot	snapshot	A consistency group's snapshot

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

space

Space information for the consistency group.

Name	Type	Description
available	integer	The amount of space available in the consistency group, in bytes.
size	integer	The total provisioned size of the consistency group, in bytes.
used	integer	The amount of space consumed in the consistency group, in bytes.

svm

The Storage Virtual Machine (SVM) in which the consistency group is located.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for volumes in this consistency group.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.

Name	Type	Description
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	integer	File mode creation mask to be viewed as an octal number.

Name	Type	Description
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.

Name	Type	Description
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.

Name	Type	Description
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

cifs

Name	Type	Description
shares	array[consistency_group_cifs_share]	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.

Name	Type	Description
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

export_policy

The policy associated with volumes to export them for protocol access.

Name	Type	Description
id	integer	Identifier for the export policy.
name	string	Name of the export policy.
rules	array[export_rules]	The set of rules that govern the export policy.

junction_parent

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.

Name	Type	Description
uuid	string	Unique identifier for the parent volume.

nas

The CIFS share policy and/or export policies for this volume.

Name	Type	Description
cifs	cifs	
export_policy	export_policy	The policy associated with volumes to export them for protocol access.
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within an SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ UNIX-style security.

Name	Type	Description
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.
unix_permissions	integer	UNIX permissions to be viewed as an octal number, consisting of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). First digit selects the set user ID (4), set group ID (2), and sticky (1) attributes. Second digit selects permission for the owner of the file. Third selects permissions for other users in the same group while the fourth selects permissions for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group, and other permissions are given (as in 755, representing the second, third and fourth digit), the first digit is assumed to be zero.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

qos

The QoS policy for this volume.

Name	Type	Description
policy	policy	The QoS policy

space

Name	Type	Description
available	integer	The available space, in bytes.
size	integer	Total provisioned size, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.

tiering

The tiering placement and policy definitions for this volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

volumes

Name	Type	Description
comment	string	A comment for the volume. Valid in POST or PATCH.

Name	Type	Description
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	The CIFS share policy and/or export policies for this volume.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	The QoS policy for this volume.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	
tiering	tiering	The tiering placement and policy definitions for this volume.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.8 • x-nullable: true

consistency_groups

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency observed at the storage object, in microseconds.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency observed at the storage object, in microseconds.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance and capacity data.
used_space	integer	The total space used in the consistency group, in bytes.

replication_relationships

Name	Type	Description
is_protected_by_svm_dr	boolean	Indicates whether or not this consistency group is protected by SVM DR.
is_source	boolean	Indicates whether or not this consistency group is the source for replication.
uuid	string	The unique identifier of the SnapMirror relationship.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.
used_space	integer	The total used space in the consistency group, in bytes.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	integer	File mode creation mask to be viewed as an octal number.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

consistency_group

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
vdisk_type	string	Type of objects in the consistency group.

Name	Type	Description
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.

Name	Type	Description
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	integer	File mode creation mask to be viewed as an octal number.

Name	Type	Description
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.

Name	Type	Description
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.

Name	Type	Description
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	integer	File mode creation mask to be viewed as an octal number.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a consistency group

DELETE `/application/consistency-groups/{uuid}`

Introduced In: 9.10

Deletes a consistency group.

> this will not delete any associated volumes or LUNs. To delete those elements, use the appropriate object endpoint.

Related ONTAP commands

- `vserver consistency-group delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the consistency group to delete.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53411842	Consistency group does not exist.
53411843	A consistency group with specified UUID was not found.
53411844	Specified consistency group was not found in the specified SVM.
53411845	The specified UUID and name refer to different consistency groups.
53411846	Either name or UUID must be provided.
53412041	Cannot delete a consistency group because it contains one or more storage units that are part of replication relationships.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a consistency group

GET `/application/consistency-groups/{uuid}`

Introduced In: 9.10

Retrieves a single consistency group.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See DOC Requesting specific fields to learn more.

- `volumes`
- `luns`
- `namespaces`

Related ONTAP commands

- `vserver consistency-group show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the group to retrieve.
vdisk_type	string	query	False	Filter by vdisk_type • Introduced in: 9.17
replicated	boolean	query	False	Filter by replicated
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
namespaces.comment	string	query	False	Filter by namespaces.comment • Introduced in: 9.12 • maxLength: 254 • minLength: 0
namespaces.subsystem_map.subsystem.comment	string	query	False	Filter by namespaces.subsystem_map.subsystem.comment • Introduced in: 9.12 • maxLength: 255 • minLength: 0
namespaces.subsystem_map.subsystem.uuid	string	query	False	Filter by namespaces.subsystem_map.subsystem.uuid • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.subsystem_map.subsystem.os_type	string	query	False	Filter by namespaces.subsystem_map.subsystem.os_type • Introduced in: 9.12
namespaces.subsystem_map.subsystem.name	string	query	False	Filter by namespaces.subsystem_map.subsystem.name • Introduced in: 9.12 • maxLength: 64 • minLength: 1
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size • Introduced in: 9.14
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function • Introduced in: 9.14
namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode • Introduced in: 9.16

Name	Type	In	Required	Description
namespaces.subsystem_map.subsystem.hosts.tls.key_type	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.tls.key_type • Introduced in: 9.16
namespaces.subsystem_map.subsystem.hosts.nqn	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.nqn • Introduced in: 9.12
namespaces.subsystem_map.subsystem.hosts.priority	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.priority • Introduced in: 9.14
namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid • Introduced in: 9.17
namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name	string	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name • Introduced in: 9.17
namespaces.subsystem_map.subsystem.hosts.proximity.local_svm	boolean	query	False	Filter by namespaces.subsystem_map.subsystem.hosts.proximity.local_svm • Introduced in: 9.17

Name	Type	In	Required	Description
namespaces.subsystem_map.nsid	string	query	False	Filter by namespaces.subsystem_map.nsid • Introduced in: 9.12
namespaces.subsystem_map.anagrpid	string	query	False	Filter by namespaces.subsystem_map.anagrpid • Introduced in: 9.12
namespaces.space.size	integer	query	False	Filter by namespaces.space.size • Introduced in: 9.12 • Max value: 140737488355328 • Min value: 4096
namespaces.space.guarantee.requested	boolean	query	False	Filter by namespaces.space.guarantee.requested • Introduced in: 9.12
namespaces.space.guarantee.reserved	boolean	query	False	Filter by namespaces.space.guarantee.reserved • Introduced in: 9.12
namespaces.space.block_size	integer	query	False	Filter by namespaces.space.block_size • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.space.used	integer	query	False	Filter by namespaces.space.used • Introduced in: 9.12
namespaces.create_time	string	query	False	Filter by namespaces.create_time • Introduced in: 9.12
namespaces.name	string	query	False	Filter by namespaces.name • Introduced in: 9.12
namespaces.uuid	string	query	False	Filter by namespaces.uuid • Introduced in: 9.12
namespaces.status.read_only	boolean	query	False	Filter by namespaces.status.read_only • Introduced in: 9.12
namespaces.status.state	string	query	False	Filter by namespaces.status.state • Introduced in: 9.12
namespaces.status.mapped	boolean	query	False	Filter by namespaces.status.mapped • Introduced in: 9.12

Name	Type	In	Required	Description
namespaces.status.container_state	string	query	False	Filter by namespaces.status.container_state • Introduced in: 9.12
namespaces.auto_delete	boolean	query	False	Filter by namespaces.auto_delete • Introduced in: 9.12
namespaces.enabled	boolean	query	False	Filter by namespaces.enabled • Introduced in: 9.12
namespaces.os_type	string	query	False	Filter by namespaces.os_type • Introduced in: 9.12
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.13
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.13
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.13

Name	Type	In	Required	Description
metric.throughput.other	integer	query	False	Filter by metric.throughput.other • Introduced in: 9.13
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.13
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.13
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.13
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.13
metric.used_space	integer	query	False	Filter by metric.used_space • Introduced in: 9.13
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.13
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.13

Name	Type	In	Required	Description
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.13
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.13
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.13
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.13
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.13
metric.size	integer	query	False	Filter by metric.size • Introduced in: 9.13
metric.available_space	integer	query	False	Filter by metric.available_space • Introduced in: 9.13
name	string	query	False	Filter by name
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name

Name	Type	In	Required	Description
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid
_tags	string	query	False	Filter by _tags • Introduced in: 9.15
luns.space.size	integer	query	False	Filter by luns.space.size • Max value: 140737488355328 • Min value: 4096
luns.space.guarantee.requested	boolean	query	False	Filter by luns.space.guarantee.requested • Introduced in: 9.11
luns.space.guarantee.reserved	boolean	query	False	Filter by luns.space.guarantee.reserved • Introduced in: 9.11
luns.space.used	integer	query	False	Filter by luns.space.used
luns.create_time	string	query	False	Filter by luns.create_time
luns.name	string	query	False	Filter by luns.name
luns.comment	string	query	False	Filter by luns.comment • maxLength: 254 • minLength: 0

Name	Type	In	Required	Description
luns.qos.policy.max_throughput_iops	integer	query	False	Filter by luns.qos.policy.max_throughput_iops • Max value: 2147483647 • Min value: 0
luns.qos.policy.max_throughput_mbps	integer	query	False	Filter by luns.qos.policy.max_throughput_mbps • Max value: 4194303 • Min value: 0
luns.qos.policy.uuid	string	query	False	Filter by luns.qos.policy.uuid
luns.qos.policy.min_throughput_mbps	integer	query	False	Filter by luns.qos.policy.min_throughput_mbps • Max value: 4194303 • Min value: 0
luns.qos.policy.name	string	query	False	Filter by luns.qos.policy.name
luns.qos.policy.min_throughput_iops	integer	query	False	Filter by luns.qos.policy.min_throughput_iops • Max value: 2147483647 • Min value: 0
luns.lun_maps.logical_unit_number	integer	query	False	Filter by luns.lun_maps.logical_unit_number
luns.lun_maps.igroup.uuid	string	query	False	Filter by luns.lun_maps.igroup.uuid

Name	Type	In	Required	Description
luns.lun_maps.igroup.comment	string	query	False	Filter by luns.lun_maps.igroup.comment • Introduced in: 9.11 • maxLength: 254 • minLength: 0
luns.lun_maps.igroup.initiators.name	string	query	False	Filter by luns.lun_maps.igroup.initiators.name
luns.lun_maps.igroup.initiators.comment	string	query	False	Filter by luns.lun_maps.igroup.initiators.comment • maxLength: 254 • minLength: 0
luns.lun_maps.igroup.os_type	string	query	False	Filter by luns.lun_maps.igroup.os_type
luns.lun_maps.igroup.name	string	query	False	Filter by luns.lun_maps.igroup.name • maxLength: 96 • minLength: 1
luns.lun_maps.igroup.igroups.name	string	query	False	Filter by luns.lun_maps.igroup.igroups.name • maxLength: 96 • minLength: 1
luns.lun_maps.igroup.igroups.uuid	string	query	False	Filter by luns.lun_maps.igroup.igroups.uuid
luns.lun_maps.igroup.protocol	string	query	False	Filter by luns.lun_maps.igroup.protocol

Name	Type	In	Required	Description
luns.enabled	boolean	query	False	Filter by luns.enabled
luns.os_type	string	query	False	Filter by luns.os_type
luns.serial_number	string	query	False	Filter by luns.serial_number • maxLength: 12 • minLength: 12
luns.uuid	string	query	False	Filter by luns.uuid
replication_source	boolean	query	False	Filter by replication_source
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.13
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.13
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.13
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.13

Name	Type	In	Required	Description
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.13
statistics.used_space	integer	query	False	Filter by statistics.used_space • Introduced in: 9.13
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.13
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.13
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.13
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other • Introduced in: 9.13
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.13

Name	Type	In	Required	Description
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.13
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.13
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.13
statistics.available_space	integer	query	False	Filter by statistics.available_space • Introduced in: 9.13
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.13
statistics.size	integer	query	False	Filter by statistics.size • Introduced in: 9.13
volumes.comment	string	query	False	Filter by volumes.comment • maxLength: 1023 • minLength: 0

Name	Type	In	Required	Description
volumes.qos.policy.name	string	query	False	Filter by volumes.qos.policy.name
volumes.qos.policy.uuid	string	query	False	Filter by volumes.qos.policy.uuid
volumes.space.size	integer	query	False	Filter by volumes.space.size
volumes.space.available	integer	query	False	Filter by volumes.space.available
volumes.space.used	integer	query	False	Filter by volumes.space.used
volumes.tiering.policy	string	query	False	Filter by volumes.tiering.policy
volumes.snapshot_policy.name	string	query	False	Filter by volumes.snapshot_policy.name
volumes.snapshot_policy.uuid	string	query	False	Filter by volumes.snapshot_policy.uuid
volumes.name	string	query	False	Filter by volumes.name • maxLength: 203 • minLength: 1
volumes.uuid	string	query	False	Filter by volumes.uuid
volumes.nas.uid	integer	query	False	Filter by volumes.nas.uid • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.export_policy.rules.chown_mode	string	query	False	Filter by volumes.nas.export_policy.rules.chown_mode • Introduced in: 9.12
volumes.nas.export_policy.rules.ntfs_unix_security	string	query	False	Filter by volumes.nas.export_policy.rules.ntfs_unix_security • Introduced in: 9.12
volumes.nas.export_policy.rules.clients.match	string	query	False	Filter by volumes.nas.export_policy.rules.clients.match • Introduced in: 9.12
volumes.nas.export_policy.rules.index	integer	query	False	Filter by volumes.nas.export_policy.rules.index • Introduced in: 9.12
volumes.nas.export_policy.rules.superuser	string	query	False	Filter by volumes.nas.export_policy.rules.superuser • Introduced in: 9.12
volumes.nas.export_policy.rules.rw_rule	string	query	False	Filter by volumes.nas.export_policy.rules.rw_rule • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.export_policy.rules.allow_device_creation	boolean	query	False	Filter by volumes.nas.export_policy.rules.allow_device_creation • Introduced in: 9.12
volumes.nas.export_policy.rules.anonymous_user	string	query	False	Filter by volumes.nas.export_policy.rules.anonymous_user • Introduced in: 9.12
volumes.nas.export_policy.rules.ro_rule	string	query	False	Filter by volumes.nas.export_policy.rules.ro_rule • Introduced in: 9.12
volumes.nas.export_policy.rules.allow_suid	boolean	query	False	Filter by volumes.nas.export_policy.rules.allow_suid • Introduced in: 9.12
volumes.nas.export_policy.rules.protocols	string	query	False	Filter by volumes.nas.export_policy.rules.protocols • Introduced in: 9.12
volumes.nas.export_policy.id	integer	query	False	Filter by volumes.nas.export_policy.id • Introduced in: 9.14

Name	Type	In	Required	Description
volumes.nas.export_policy.name	string	query	False	Filter by volumes.nas.export_policy.name • Introduced in: 9.12
volumes.nas.junction_parent.name	string	query	False	Filter by volumes.nas.junction_parent.name • Introduced in: 9.12
volumes.nas.junction_parent.uuid	string	query	False	Filter by volumes.nas.junction_parent.uuid • Introduced in: 9.12
volumes.nas.cifs.shares.access_based_enumeration	boolean	query	False	Filter by volumes.nas.cifs.shares.access_based_enumeration • Introduced in: 9.12
volumes.nas.cifs.shares.name	string	query	False	Filter by volumes.nas.cifs.shares.name • Introduced in: 9.12 • maxLength: 80 • minLength: 1
volumes.nas.cifs.shares.acls.type	string	query	False	Filter by volumes.nas.cifs.shares.acls.type • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.acls.permission	string	query	False	Filter by volumes.nas.cifs.shares.acls.permission • Introduced in: 9.12
volumes.nas.cifs.shares.acls.user_or_group	string	query	False	Filter by volumes.nas.cifs.shares.acls.user_or_group • Introduced in: 9.12
volumes.nas.cifs.shares.acls.win_sid_unix_id	string	query	False	Filter by volumes.nas.cifs.shares.acls.win_sid_unix_id • Introduced in: 9.16
volumes.nas.cifs.shares.no_strict_security	boolean	query	False	Filter by volumes.nas.cifs.shares.no_strict_security • Introduced in: 9.12
volumes.nas.cifs.shares.unix_symlink	string	query	False	Filter by volumes.nas.cifs.shares.unix_symlink • Introduced in: 9.12
volumes.nas.cifs.shares.show_snapshot	boolean	query	False	Filter by volumes.nas.cifs.shares.show_snapshot • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.change_notify	boolean	query	False	Filter by volumes.nas.cifs.shares.change_notify • Introduced in: 9.12
volumes.nas.cifs.shares.offline_files	string	query	False	Filter by volumes.nas.cifs.shares.offline_files • Introduced in: 9.12
volumes.nas.cifs.shares.allow_unencrypted_access	boolean	query	False	Filter by volumes.nas.cifs.shares.allow_unencrypted_access • Introduced in: 9.12
volumes.nas.cifs.shares.home_directory	boolean	query	False	Filter by volumes.nas.cifs.shares.home_directory • Introduced in: 9.12
volumes.nas.cifs.shares.file_umask	integer	query	False	Filter by volumes.nas.cifs.shares.file_umask • Introduced in: 9.12
volumes.nas.cifs.shares.dir_umask	integer	query	False	Filter by volumes.nas.cifs.shares.dir_umask • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.cifs.shares.continuously_available	boolean	query	False	Filter by volumes.nas.cifs.shares.continuously_available • Introduced in: 9.12
volumes.nas.cifs.shares.oplocks	boolean	query	False	Filter by volumes.nas.cifs.shares.oplocks • Introduced in: 9.12
volumes.nas.cifs.shares.namespace_caching	boolean	query	False	Filter by volumes.nas.cifs.shares.namespace_caching • Introduced in: 9.12
volumes.nas.cifs.shares.comment	string	query	False	Filter by volumes.nas.cifs.shares.comment • Introduced in: 9.12 • maxLength: 256 • minLength: 1
volumes.nas.cifs.shares.vscan_profile	string	query	False	Filter by volumes.nas.cifs.shares.vscan_profile • Introduced in: 9.12
volumes.nas.cifs.shares.encryption	boolean	query	False	Filter by volumes.nas.cifs.shares.encryption • Introduced in: 9.12

Name	Type	In	Required	Description
volumes.nas.path	string	query	False	Filter by volumes.nas.path • Introduced in: 9.12
volumes.nas.unix_permissions	integer	query	False	Filter by volumes.nas.unix_permissions • Introduced in: 9.12
volumes.nas.security_style	string	query	False	Filter by volumes.nas.security_style • Introduced in: 9.12
volumes.nas.gid	integer	query	False	Filter by volumes.nas.gid • Introduced in: 9.12
qos.policy.name	string	query	False	Filter by qos.policy.name
qos.policy.uuid	string	query	False	Filter by qos.policy.uuid
tiering.policy	string	query	False	Filter by tiering.policy
application.type	string	query	False	Filter by application.type • Introduced in: 9.12
application.component_type	string	query	False	Filter by application.component_type • Introduced in: 9.12

Name	Type	In	Required	Description
space.available	integer	query	False	Filter by space.available
space.size	integer	query	False	Filter by space.size
space.used	integer	query	False	Filter by space.used
parent_consistency_group.name	string	query	False	Filter by parent_consistency_group.name
parent_consistency_group.uuid	string	query	False	Filter by parent_consistency_group.uuid
consistency_groups.volumes.comment	string	query	False	Filter by consistency_groups.volumes.comment • maxLength: 1023 • minLength: 0
consistency_groups.volumes.qos.policy.name	string	query	False	Filter by consistency_groups.volumes.qos.policy.name
consistency_groups.volumes.qos.policy.uuid	string	query	False	Filter by consistency_groups.volumes.qos.policy.uuid
consistency_groups.volumes.space.size	integer	query	False	Filter by consistency_groups.volumes.space.size
consistency_groups.volumes.space.available	integer	query	False	Filter by consistency_groups.volumes.space.available
consistency_groups.volumes.space.used	integer	query	False	Filter by consistency_groups.volumes.space.used

Name	Type	In	Required	Description
consistency_groups.volumes.tiering.policy	string	query	False	Filter by consistency_groups.volumes.tiering.policy
consistency_groups.volumes.snapshot_policy.name	string	query	False	Filter by consistency_groups.volumes.snapshot_policy.name
consistency_groups.volumes.snapshot_policy.uuid	string	query	False	Filter by consistency_groups.volumes.snapshot_policy.uuid
consistency_groups.volumes.name	string	query	False	Filter by consistency_groups.volumes.name • maxLength: 203 • minLength: 1
consistency_groups.volumes.uuid	string	query	False	Filter by consistency_groups.volumes.uuid
consistency_groups.volumes.nas.uid	integer	query	False	Filter by consistency_groups.volumes.nas.uid • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.chown_mode	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.chown_mode • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.export_policy.rules.ntfs_unix_security	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.ntfs_unix_security • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.clients.match	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.clients.match • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.index	integer	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.index • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.superuser	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.superuser • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.rw_rule	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.rw_rule • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.export_policy.rules.allow_device_creation	boolean	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.allow_device_creation • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.anonymous_user	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.anonymous_user • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.ro_rule	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.ro_rule • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.allow_suid	boolean	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.allow_suid • Introduced in: 9.12
consistency_groups.volumes.nas.export_policy.rules.protocols	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.rules.protocols • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.export_policy.id	integer	query	False	Filter by consistency_groups.volumes.nas.export_policy.id • Introduced in: 9.14
consistency_groups.volumes.nas.export_policy.name	string	query	False	Filter by consistency_groups.volumes.nas.export_policy.name • Introduced in: 9.12
consistency_groups.volumes.nas.junction_parent.name	string	query	False	Filter by consistency_groups.volumes.nas.junction_parent.name • Introduced in: 9.12
consistency_groups.volumes.nas.junction_parent.uuid	string	query	False	Filter by consistency_groups.volumes.nas.junction_parent.uuid • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.access_based_enumeration	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.access_based_enumeration • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.name	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.name • Introduced in: 9.12 • maxLength: 80 • minLength: 1
consistency_groups.volumes.nas.cifs.shares.acls.type	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.type • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.acls.permission	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.permission • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.acls.user_or_group	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.user_or_group • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.acls.win_sid_unix_id	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.acls.win_sid_unix_id • Introduced in: 9.16

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.no_strict_security	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.no_strict_security • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.unix_symlink	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.unix_symlink • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.show_snapshot	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.show_snapshot • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.change_notify	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.change_notify • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.offline_files	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.offline_files • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.allow_unencrypted_access	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.allow_unencrypted_access • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.home_directory	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.home_directory • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.file_umask	integer	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.file_umask • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.dir_umask	integer	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.dir_umask • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.continuously_available	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.continuously_available • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.oplocks	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.oplocks • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.namespace_caching	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.namespace_caching • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.cifs.shares.comment	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.comment • Introduced in: 9.12 • maxLength: 256 • minLength: 1
consistency_groups.volumes.nas.cifs.shares.vscan_profile	string	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.vscan_profile • Introduced in: 9.12
consistency_groups.volumes.nas.cifs.shares.encryption	boolean	query	False	Filter by consistency_groups.volumes.nas.cifs.shares.encryption • Introduced in: 9.12
consistency_groups.volumes.nas.path	string	query	False	Filter by consistency_groups.volumes.nas.path • Introduced in: 9.12
consistency_groups.volumes.nas.unix_permissions	integer	query	False	Filter by consistency_groups.volumes.nas.unix_permissions • Introduced in: 9.12
consistency_groups.volumes.nas.security_style	string	query	False	Filter by consistency_groups.volumes.nas.security_style • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.volumes.nas.gid	integer	query	False	Filter by consistency_groups.volumes.nas.gid • Introduced in: 9.12
consistency_groups.luns.space.size	integer	query	False	Filter by consistency_groups.luns.space.size • Max value: 140737488355328 • Min value: 4096
consistency_groups.luns.space.guarantee.requested	boolean	query	False	Filter by consistency_groups.luns.space.guarantee.requested • Introduced in: 9.11
consistency_groups.luns.space.guarantee.reserved	boolean	query	False	Filter by consistency_groups.luns.space.guarantee.reserved • Introduced in: 9.11
consistency_groups.luns.space.used	integer	query	False	Filter by consistency_groups.luns.space.used
consistency_groups.luns.create_time	string	query	False	Filter by consistency_groups.luns.create_time
consistency_groups.luns.name	string	query	False	Filter by consistency_groups.luns.name

Name	Type	In	Required	Description
consistency_groups.luns.comment	string	query	False	Filter by consistency_groups.luns.comment • maxLength: 254 • minLength: 0
consistency_groups.luns.qos.policy.max_throughput_iops	integer	query	False	Filter by consistency_groups.luns.qos.policy.max_throughput_iops • Max value: 2147483647 • Min value: 0
consistency_groups.luns.qos.policy.max_throughput_mbps	integer	query	False	Filter by consistency_groups.luns.qos.policy.max_throughput_mbps • Max value: 4194303 • Min value: 0
consistency_groups.luns.qos.policy.uuid	string	query	False	Filter by consistency_groups.luns.qos.policy.uuid
consistency_groups.luns.qos.policy.min_throughput_mbps	integer	query	False	Filter by consistency_groups.luns.qos.policy.min_throughput_mbps • Max value: 4194303 • Min value: 0
consistency_groups.luns.qos.policy.name	string	query	False	Filter by consistency_groups.luns.qos.policy.name

Name	Type	In	Required	Description
consistency_groups.luns.qos.policy.min_throughput_iops	integer	query	False	Filter by consistency_groups.luns.qos.policy.min_throughput_iops • Max value: 2147483647 • Min value: 0
consistency_groups.luns.lun_maps.logical_unit_number	integer	query	False	Filter by consistency_groups.luns.lun_maps.logical_unit_number
consistency_groups.luns.lun_maps.igroup.uuid	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.uuid
consistency_groups.luns.lun_maps.igroup.comment	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.comment • Introduced in: 9.11 • maxLength: 254 • minLength: 0
consistency_groups.luns.lun_maps.igroup.initiators.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.initiators.name
consistency_groups.luns.lun_maps.igroup.initiators.comment	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.initiators.comment • maxLength: 254 • minLength: 0
consistency_groups.luns.lun_maps.igroup.os_type	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.os_type

Name	Type	In	Required	Description
consistency_groups.luns.lun_maps.igroup.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.name • maxLength: 96 • minLength: 1
consistency_groups.luns.lun_maps.igroup.igroups.name	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.igroups.name • maxLength: 96 • minLength: 1
consistency_groups.luns.lun_maps.igroup.igroups.uuid	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.igroups.uuid
consistency_groups.luns.lun_maps.igroup.protocol	string	query	False	Filter by consistency_groups.luns.lun_maps.igroup.protocol
consistency_groups.luns.enabled	boolean	query	False	Filter by consistency_groups.luns.enabled
consistency_groups.luns.os_type	string	query	False	Filter by consistency_groups.luns.os_type
consistency_groups.luns.serial_number	string	query	False	Filter by consistency_groups.luns.serial_number • maxLength: 12 • minLength: 12
consistency_groups.luns.uuid	string	query	False	Filter by consistency_groups.luns.uuid

Name	Type	In	Required	Description
consistency_groups.tiering.policy	string	query	False	Filter by consistency_groups.tiering.policy
consistency_groups.application.type	string	query	False	Filter by consistency_groups.application.type • Introduced in: 9.12
consistency_groups.application.component_type	string	query	False	Filter by consistency_groups.application.component_type • Introduced in: 9.12
consistency_groups.space.available	integer	query	False	Filter by consistency_groups.space.available
consistency_groups.space.size	integer	query	False	Filter by consistency_groups.space.size
consistency_groups.space.used	integer	query	False	Filter by consistency_groups.space.used
consistency_groups.parent_consistency_group.name	string	query	False	Filter by consistency_groups.parent_consistency_group.name
consistency_groups.parent_consistency_group.uuid	string	query	False	Filter by consistency_groups.parent_consistency_group.uuid
consistency_groups.qos.policy.name	string	query	False	Filter by consistency_groups.qos.policy.name
consistency_groups.qos.policy.uuid	string	query	False	Filter by consistency_groups.qos.policy.uuid

Name	Type	In	Required	Description
consistency_groups.svm.name	string	query	False	Filter by consistency_groups.svm.name
consistency_groups.svm.uuid	string	query	False	Filter by consistency_groups.svm.uuid
consistency_groups.uuid	string	query	False	Filter by consistency_groups.uuid
consistency_groups.snapshot_policy.name	string	query	False	Filter by consistency_groups.snapshot_policy.name
consistency_groups.snapshot_policy.uuid	string	query	False	Filter by consistency_groups.snapshot_policy.uuid
consistency_groups.name	string	query	False	Filter by consistency_groups.name
consistency_groups._tags	string	query	False	Filter by consistency_groups._tags • Introduced in: 9.15
consistency_groups.namespaces.comment	string	query	False	Filter by consistency_groups.namespaces.comment • Introduced in: 9.12 • maxLength: 254 • minLength: 0

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.comment	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.comment • Introduced in: 9.12 • maxLength: 255 • minLength: 0
consistency_groups.namespaces.subsystem_map.subsystem.uuid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.uuid • Introduced in: 9.12
consistency_groups.namespaces.subsystem_map.subsystem.os_type	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.os_type • Introduced in: 9.12
consistency_groups.namespaces.subsystem_map.subsystem.name	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.name • Introduced in: 9.12 • maxLength: 64 • minLength: 1

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.group_size • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.dh_hmac_chap.mode • Introduced in: 9.16
consistency_groups.namespaces.subsystem_map.subsystem.hosts.tls.key_type	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.tls.key_type • Introduced in: 9.16
consistency_groups.namespaces.subsystem_map.subsystem.hosts.nqn	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.nqn • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.subsystem.hosts.priority	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.priority • Introduced in: 9.14
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.uuid • Introduced in: 9.17
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.peer_svms.name • Introduced in: 9.17
consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.local_svm	boolean	query	False	Filter by consistency_groups.namespaces.subsystem_map.subsystem.hosts.proximity.local_svm • Introduced in: 9.17
consistency_groups.namespaces.subsystem_map.nsid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.nsid • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.subsystem_map.anagrpid	string	query	False	Filter by consistency_groups.namespaces.subsystem_map.anagrpid • Introduced in: 9.12
consistency_groups.namespaces.space.size	integer	query	False	Filter by consistency_groups.namespaces.space.size • Introduced in: 9.12 • Max value: 140737488355328 • Min value: 4096
consistency_groups.namespaces.space.guarantee.requested	boolean	query	False	Filter by consistency_groups.namespaces.space.guarantee.requested • Introduced in: 9.12
consistency_groups.namespaces.space.guarantee.reserved	boolean	query	False	Filter by consistency_groups.namespaces.space.guarantee.reserved • Introduced in: 9.12
consistency_groups.namespaces.space.block_size	integer	query	False	Filter by consistency_groups.namespaces.space.block_size • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.space.used	integer	query	False	Filter by consistency_groups.namespaces.space.used • Introduced in: 9.12
consistency_groups.namespaces.create_time	string	query	False	Filter by consistency_groups.namespaces.create_time • Introduced in: 9.12
consistency_groups.namespaces.name	string	query	False	Filter by consistency_groups.namespaces.name • Introduced in: 9.12
consistency_groups.namespaces.uuid	string	query	False	Filter by consistency_groups.namespaces.uuid • Introduced in: 9.12
consistency_groups.namespaces.status.read_only	boolean	query	False	Filter by consistency_groups.namespaces.status.read_only • Introduced in: 9.12
consistency_groups.namespaces.status.state	string	query	False	Filter by consistency_groups.namespaces.status.state • Introduced in: 9.12

Name	Type	In	Required	Description
consistency_groups.namespaces.status.mapped	boolean	query	False	Filter by consistency_groups.namespaces.status.mapped • Introduced in: 9.12
consistency_groups.namespaces.status.container_state	string	query	False	Filter by consistency_groups.namespaces.status.container_state • Introduced in: 9.12
consistency_groups.namespaces.auto_delete	boolean	query	False	Filter by consistency_groups.namespaces.auto_delete • Introduced in: 9.12
consistency_groups.namespaces.enabled	boolean	query	False	Filter by consistency_groups.namespaces.enabled • Introduced in: 9.12
consistency_groups.namespaces.os_type	string	query	False	Filter by consistency_groups.namespaces.os_type • Introduced in: 9.12
replication_relationships.uuid	string	query	False	Filter by replication_relationships.uuid • Introduced in: 9.13

Name	Type	In	Required	Description
replication_relationships.is_source	boolean	query	False	Filter by replication_relationships.is_source • Introduced in: 9.13
replication_relationships.is_protected_by_svm_dr	boolean	query	False	Filter by replication_relationships.is_protected_by_svm_dr • Introduced in: 9.14
clone.split_estimate	integer	query	False	Filter by clone.split_estimate • Introduced in: 9.15
clone.parent_svm.name	string	query	False	Filter by clone.parent_svm.name • Introduced in: 9.15
clone.parent_svm.uuid	string	query	False	Filter by clone.parent_svm.uuid • Introduced in: 9.15
clone.split_initiated	boolean	query	False	Filter by clone.split_initiated • Introduced in: 9.12
clone.guarantee.type	string	query	False	Filter by clone.guarantee.type • Introduced in: 9.12

Name	Type	In	Required	Description
clone.is_flexclone	boolean	query	False	Filter by clone.is_flexclone • Introduced in: 9.15
clone.parent_consistency_group.uuid	string	query	False	Filter by clone.parent_consistency_group.uuid • Introduced in: 9.12
clone.parent_consistency_group.name	string	query	False	Filter by clone.parent_consistency_group.name • Introduced in: 9.12
clone.parent_snapshot.name	string	query	False	Filter by clone.parent_snapshot.name • Introduced in: 9.12
clone.parent_snapshot.uuid	string	query	False	Filter by clone.parent_snapshot.uuid • Introduced in: 9.15
clone.volume.prefix	string	query	False	Filter by clone.volume.prefix • Introduced in: 9.12
clone.volume.suffix	string	query	False	Filter by clone.volume.suffix • Introduced in: 9.12

Name	Type	In	Required	Description
clone.split_complete_percent	integer	query	False	Filter by clone.split_complete_percent • Introduced in: 9.15
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
metric	metric	Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
qos	qos	
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.

Name	Type	Description
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	Space information for the consistency group.
statistics	statistics	These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
vdisk_type	string	Type of objects in the consistency group.
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "application": {
    "component_type": "string",
    "type": "string"
  },
  "clone": {
    "guarantee": {
      "type": "string"
    },
    "parent_consistency_group": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "uuid": "string"
    },
    "parent_snapshot": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "this_snapshot",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "parent_svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
      },
      "split_complete_percent": 0,
      "split_estimate": 0,
      "volume": {
        "prefix": "string",
        "suffix": "string"
      }
    },
    "consistency_groups": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "_tags": [
          "team:csi",
          "environment:test"
        ],
        "application": {
          "component_type": "string",
          "type": "string"
        },
        "luns": [
          {
            "comment": "string",
            "create_time": "2018-06-04 15:00:00 -0400",
            "lun_maps": [
              {
                "igroup": {
                  "comment": "string",
                  "igroups": [
                    {
                      "_links": {
                        "self": {
                          "href": "/api/resourcelink"
                        }
                      },
                      "name": "igroup1",
                      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
                    }
                  ],
                  "initiators": [
                    {
                      "comment": "my comment",
                      "name": "iqn.1998-01.com.corp.iscsi:name1"
```

```
                }
              ],
              "name": "igroup1",
              "os_type": "string",
              "protocol": "string",
              "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ],
        "name": "/vol/volume1/lun1",
        "os_type": "string",
        "qos": {
          "policy": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "max_throughput_iops": 10000,
            "max_throughput_mbps": 500,
            "min_throughput_iops": 2000,
            "min_throughput_mbps": 500,
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "serial_number": "string",
        "space": {
          "size": 1073741824,
          "used": 0
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "name": "string",
    "namespaces": [
      {
        "comment": "string",
        "create_time": "2018-06-04 15:00:00 -0400",
        "name": "/vol/volume1/qtree1/namespace1",
        "os_type": "string",
        "space": {
          "block_size": 512,
          "size": 1073741824,
          "used": 0
        },
```

```
        "status": {
          "container_state": "string",
          "state": "online"
        },
        "subsystem_map": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "anagrpid": "00103050h",
          "nsid": "00000001h",
          "subsystem": {
            "comment": "string",
            "hosts": [
              {
                "dh_hmac_chap": {
                  "group_size": "string",
                  "hash_function": "string",
                  "mode": "bidirectional"
                },
                "nqn": "nqn.1992-01.example.com:string",
                "priority": "string",
                "proximity": {
                  "peer_svms": [
                    {
                      "_links": {
                        "self": {
                          "href": "/api/resourcelink"
                        }
                      },
                      "name": "peer1",
                      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                    }
                  ]
                },
                "tls": {
                  "key_type": "configured"
                }
              }
            ],
            "name": "subsystem1",
            "os_type": "string",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
```

```
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "parent_consistency_group": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "my_consistency_group",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "qos": {
      "policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "restore_to": {
      "snapshot": {
        "name": "string",
        "uuid": "string"
      }
    },
    "snapshot_policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "space": {
      "available": 5737418,
      "size": 1073741824,
      "used": 5737418
    },
    "svm": {
      "_links": {
        "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tiering": {
        "object_stores": [
          {}
        ],
        "policy": "string"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "volumes": [
        {
          "comment": "string",
          "name": "vol_cs_dept",
          "nas": {
            "cifs": {
              "shares": [
                {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "acls": [
                    {
                      "_links": {
                        "self": {
                          "href": "/api/resourcelink"
                        }
                      },
                      "permission": "string",
                      "type": "string",
                      "user_or_group": "ENGDOMAIN\\ad_user",
                      "win_sid_unix_id": "string"
                    }
                  ],
                  "comment": "HR Department Share",
                  "dir_umask": 18,
                  "file_umask": 18,
                  "name": "HR_SHARE",
                  "offline_files": "string",
                  "unix_symlink": "string",
                  "vscan_profile": "string"
```

```
            }
          ]
        },
        "export_policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "id": 0,
          "name": "string",
          "rules": [
            {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "anonymous_user": "string",
              "chown_mode": "string",
              "clients": [
                {
                  "match": "0.0.0.0/0"
                }
              ],
              "ntfs_unix_security": "string",
              "protocols": [
                "string"
              ],
              "ro_rule": [
                "string"
              ],
              "rw_rule": [
                "string"
              ],
              "superuser": [
                "string"
              ]
            }
          ]
        },
        "junction_parent": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
```

```
            },
            "name": "vs1_root",
            "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
          },
          "path": "/user/my_volume",
          "security_style": "string",
          "unix_permissions": 493
        },
        "qos": {
          "policy": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "snapshot_policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "space": {
          "available": 0,
          "used": 0
        },
        "tiering": {
          "object_stores": [
            {}
          ],
          "policy": "string"
        },
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    ]
  }
],
"luns": [
  {
    "comment": "string",
```

```
      "create_time": "2018-06-04 15:00:00 -0400",
      "lun_maps": [
        {
          "igroup": {
            "comment": "string",
            "igroups": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "igroup1",
                "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
              }
            ],
            "initiators": [
              {
                "comment": "my comment",
                "name": "iqn.1998-01.com.corp.iscsi:name1"
              }
            ],
            "name": "igroup1",
            "os_type": "string",
            "protocol": "string",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "name": "/vol/volume1/lun1",
      "os_type": "string",
      "qos": {
        "policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "max_throughput_iops": 10000,
          "max_throughput_mbps": 500,
          "min_throughput_iops": 2000,
          "min_throughput_mbps": 500,
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
```

```
      "serial_number": "string",
      "space": {
        "size": 1073741824,
        "used": 0
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "available_space": 4096,
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "size": 4096,
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500",
    "used_space": 4096
  },
  "name": "string",
  "namespaces": [
    {
      "comment": "string",
      "create_time": "2018-06-04 15:00:00 -0400",
      "name": "/vol/volume1/qtree1/namespace1",
      "os_type": "string",
      "space": {
        "block_size": 512,
        "size": 1073741824,
```

```
        "used": 0
      },
      "status": {
        "container_state": "string",
        "state": "online"
      },
      "subsystem_map": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "anagrpid": "00103050h",
        "nsid": "00000001h",
        "subsystem": {
          "comment": "string",
          "hosts": [
            {
              "dh_hmac_chap": {
                "group_size": "string",
                "hash_function": "string",
                "mode": "bidirectional"
              },
              "nqn": "nqn.1992-01.example.com:string",
              "priority": "string",
              "proximity": {
                "peer_svms": [
                  {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "name": "peer1",
                    "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                  }
                ]
              },
              "tls": {
                "key_type": "configured"
              }
            }
          ],
          "name": "subsystem1",
          "os_type": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
        }
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "parent_consistency_group": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "my_consistency_group",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "qos": {
    "policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "replication_relationships": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "restore_to": {
    "snapshot": {
      "name": "string",
      "uuid": "string"
    }
  },
  "snapshot_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
```

```
      },
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "space": {
      "available": 5737418,
      "size": 1073741824,
      "used": 5737418
    },
    "statistics": {
      "available_space": 4096,
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "size": 4096,
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "used_space": 4096
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "tiering": {
      "object_stores": [
        {}
      ],
      "policy": "string"
    },
```

```
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vdisk_type": "luns",
  "volumes": [
    {
      "comment": "string",
      "name": "vol_cs_dept",
      "nas": {
        "cifs": {
          "shares": [
            {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "acls": [
                {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "permission": "string",
                  "type": "string",
                  "user_or_group": "ENGDOMAIN\\ad_user",
                  "win_sid_unix_id": "string"
                }
              ],
              "comment": "HR Department Share",
              "dir_umask": 18,
              "file_umask": 18,
              "name": "HR_SHARE",
              "offline_files": "string",
              "unix_symlink": "string",
              "vscan_profile": "string"
            }
          ]
        },
        "export_policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "id": 0,
          "name": "string",
```

```
          "rules": [
            {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "anonymous_user": "string",
              "chown_mode": "string",
              "clients": [
                {
                  "match": "0.0.0.0/0"
                }
              ],
              "ntfs_unix_security": "string",
              "protocols": [
                "string"
              ],
              "ro_rule": [
                "string"
              ],
              "rw_rule": [
                "string"
              ],
              "superuser": [
                "string"
              ]
            }
          ]
        },
        "junction_parent": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "vs1_root",
          "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
        },
        "path": "/user/my_volume",
        "security_style": "string",
        "unix_permissions": 493
      },
      "qos": {
        "policy": {
          "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "snapshot_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "space": {
        "available": 0,
        "used": 0
      },
      "tiering": {
        "object_stores": [
          {}
        ],
        "policy": "string"
      },
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53411842	Consistency group does not exist.
53411843	A consistency group with specified UUID was not found.

Error Code	Description
53411844	Specified consistency group was not found in the specified SVM.
53411845	The specified UUID and name refer to different consistency groups.
53411846	Either name or UUID must be provided.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

application

Name	Type	Description
component_type	string	Nested consistency group tag.
type	string	Top level consistency group tag.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

parent_consistency_group

Consistency group that is to be cloned.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

Name	Type	Description
self	href	

parent_snapshot

Consistency group that is to be cloned.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume name suffix/prefix for the cloned volumes.

Name	Type	Description
prefix	string	Volume name prefix for cloned volumes.
suffix	string	Volume name suffix for cloned volumes.

clone

Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
guarantee	guarantee	
is_flexclone	boolean	Specifies if this consistency group is a FlexClone of a consistency group.
parent_consistency_group	parent_consistency_group	Consistency group that is to be cloned.

Name	Type	Description
parent_snapshot	parent_snapshot	Consistency group that is to be cloned.
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
split_complete_percent	integer	Percentage of FlexClone blocks split from its parent consistency group.
split_estimate	integer	Space required to split the FlexClone consistency group.
split_initiated	boolean	Splits volumes after cloning. Defaults to false during POST. Only accepts true during a PATCH.
volume	volume	Volume name suffix/prefix for the cloned volumes.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

igroups

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.

Name	Type	Description
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

policy

The QoS policy

Name	Type	Description
_links	self_link	
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

Name	Type	Description
policy	policy	The QoS policy

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform, and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

luns

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the LUN was created.
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, you can consult the `state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
lun_maps	array[lun_maps]	An array of LUN maps. A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.
name	string	The fully qualified path name of the LUN composed of the "/vol" prefix, the volume name, the qtree name (optional), and the base name of the LUN. Valid in POST and PATCH.

Name	Type	Description
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
qos	qos	
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
space	space	The storage space related properties of the LUN.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace, in bytes. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.

Name	Type	Description
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

consistency_group_nvme_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

consistency_group_nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.

Name	Type	Description
hosts	array[consistency_group_nvme_host]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`.
They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.

Name	Type	Description
_links	self_link	
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	consistency_group_nvme_subsystem	An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

namespaces

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.

Name	Type	Description
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.
space	space	The storage space related properties of the NVMe namespace.
status	status	Status information about the NVMe namespace.
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.
uuid	string	The unique identifier of the NVMe namespace.

parent_consistency_group

The parent consistency group.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

storage_service

Determines the placement of any storage object created during this operation.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
name	string	New name for consistency group. Required to resolve naming collisions.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

policy

The QoS policy

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot

A consistency group's snapshot

Name	Type	Description
name	string	The name of the consistency group's snapshot to restore to.
uuid	string	The UUID of the consistency group's snapshot to restore to.

restore_to

Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot	snapshot	A consistency group's snapshot

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

space

Space information for the consistency group.

Name	Type	Description
available	integer	The amount of space available in the consistency group, in bytes.
size	integer	The total provisioned size of the consistency group, in bytes.
used	integer	The amount of space consumed in the consistency group, in bytes.

svm

The Storage Virtual Machine (SVM) in which the consistency group is located.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

object_stores

tiering

The tiering placement and policy definitions for volumes in this consistency group.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
_links	_links	

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.
win_sid_unix_id	string	Windows SID/UNIX ID depending on access-control type.

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
_links	_links	

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	integer	File mode creation mask to be viewed as an octal number.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.12 • readCreate: 1 • x-nullable: true

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

cifs

Name	Type	Description
shares	array[consistency_group_cifs_share]	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.

Name	Type	Description
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

export_policy

The policy associated with volumes to export them for protocol access.

Name	Type	Description
_links	self_link	
id	integer	Identifier for the export policy.
name	string	Name of the export policy.
rules	array[export_rules]	The set of rules that govern the export policy.

junction_parent

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.
uuid	string	Unique identifier for the parent volume.

nas

The CIFS share policy and/or export policies for this volume.

Name	Type	Description
cifs	cifs	
export_policy	export_policy	The policy associated with volumes to export them for protocol access.
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within an SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.

Name	Type	Description
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ UNIX-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.
unix_permissions	integer	UNIX permissions to be viewed as an octal number, consisting of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). First digit selects the set user ID (4), set group ID (2), and sticky (1) attributes. Second digit selects permission for the owner of the file. Third selects permissions for other users in the same group while the fourth selects permissions for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group, and other permissions are given (as in 755, representing the second, third and fourth digit), the first digit is assumed to be zero.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

Name	Type	Description
storage_service	storage_service	Determines the placement of any storage object created during this operation.

qos

The QoS policy for this volume.

Name	Type	Description
policy	policy	The QoS policy

space

Name	Type	Description
available	integer	The available space, in bytes.
size	integer	Total provisioned size, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.

tiering

The tiering placement and policy definitions for this volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

volumes

Name	Type	Description
comment	string	A comment for the volume. Valid in POST or PATCH.

Name	Type	Description
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	The CIFS share policy and/or export policies for this volume.
qos	qos	The QoS policy for this volume.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	
tiering	tiering	The tiering placement and policy definitions for this volume.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.8 • x-nullable: true

consistency_groups

Name	Type	Description
_links	self_link	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.

Name	Type	Description
application	application	
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.
name	string	Name of the consistency group. The consistency group name must be unique within an SVM. If not provided and the consistency group contains only one volume, the name will be generated based on the volume name. If the consistency group contains more than one volume, the name is required.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
qos	qos	
restore_to	restore_to	Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	Space information for the consistency group.
svm	svm	The Storage Virtual Machine (SVM) in which the consistency group is located.
tiering	tiering	The tiering placement and policy definitions for volumes in this consistency group.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency observed at the storage object, in microseconds.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.

Name	Type	Description
_links	_links	
available_space	integer	The total space available in the consistency group, in bytes.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency observed at the storage object, in microseconds.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance and capacity data.
used_space	integer	The total space used in the consistency group, in bytes.

replication_relationships

Name	Type	Description
_links	self_link	
is_protected_by_svm_dr	boolean	Indicates whether or not this consistency group is protected by SVM DR.
is_source	boolean	Indicates whether or not this consistency group is the source for replication.

Name	Type	Description
uuid	string	The unique identifier of the SnapMirror relationship.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.
used_space	integer	The total used space in the consistency group, in bytes.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a consistency group

PATCH `/application/consistency-groups/{uuid}`

Introduced In: 9.10

Updates a consistency group.

> that this operation will never delete storage elements. You can specify only elements that should be added to the consistency group regardless of existing storage objects.
> Mapping or unmapping a consistency group from igroups or subsystems is not supported.

Related ONTAP commands

- `vserver consistency-group modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the consistency group to modify.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
vdisk_type	string	Type of objects in the consistency group.

Name	Type	Description
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "application": {
    "component_type": "string",
    "type": "string"
  },
  "clone": {
    "parent_svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "split_complete_percent": 0,
    "split_estimate": 0
  },
  "consistency_groups": [
    {
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "application": {
        "component_type": "string",
        "type": "string"
      },
      "luns": [
        {
          "clone": {
            "source": {
              "name": "/vol/volume1/lun1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "comment": "string",
          "create_time": "2018-06-04 15:00:00 -0400",
          "lun_maps": [
            {
              "igroup": {
                "comment": "string",
                "igroups": [
                  {
                    "name": "igroup1",
```

```
                "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
              }
            ],
            "initiators": [
              {
                "comment": "my comment",
                "name": "iqn.1998-01.com.corp.iscsi:name1"
              }
            ],
            "name": "igroup1",
            "os_type": "string",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "provisioning_options": {
        "action": "string"
      },
      "qos": {
        "policy": {
          "max_throughput_iops": 10000,
          "max_throughput_mbps": 500,
          "min_throughput_iops": 2000,
          "min_throughput_mbps": 500,
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "serial_number": "string",
      "space": {
        "size": 1073741824,
        "used": 0
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "namespaces": [
    {
      "comment": "string",
      "create_time": "2018-06-04 15:00:00 -0400",
      "name": "/vol/volume1/qtree1/namespace1",
      "provisioning_options": {
        "action": "string"
      },
      "space": {
        "size": 1073741824,
```

```
            "used": 0
          },
          "subsystem_map": {
            "anagrpid": "00103050h",
            "nsid": "00000001h",
            "subsystem": {
              "comment": "string",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "parent_consistency_group": {
        "name": "my_consistency_group",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "provisioning_options": {
        "action": "string",
        "name": "string",
        "storage_service": {
          "name": "string"
        }
      },
      "qos": {
        "policy": {
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "restore_to": {
        "snapshot": {
          "name": "string",
          "uuid": "string"
        }
      },
      "snapshot_policy": {
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "volumes": [
        {
          "comment": "string",
          "name": "vol_cs_dept",
          "nas": {
```

```
            "cifs": {
              "shares": [
                {
                  "comment": "HR Department Share",
                  "dir_umask": 18,
                  "file_umask": 18,
                  "home_directory": true,
                  "offline_files": "string",
                  "unix_symlink": "string",
                  "vscan_profile": "string"
                }
              ]
            },
            "export_policy": {
              "id": 0,
              "name": "string",
              "rules": [
                {
                  "anonymous_user": "string",
                  "chown_mode": "string",
                  "clients": [
                    {
                      "match": "0.0.0.0/0"
                    }
                  ],
                  "ntfs_unix_security": "string",
                  "protocols": [
                    "string"
                  ],
                  "ro_rule": [
                    "string"
                  ],
                  "rw_rule": [
                    "string"
                  ],
                  "superuser": [
                    "string"
                  ]
                }
              ]
            }
          },
          "provisioning_options": {
            "action": "string",
            "storage_service": {
              "name": "string"
```

```
            }
          },
          "qos": {
            "policy": {
              "name": "performance",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          },
          "snapshot_policy": {
            "name": "default",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "space": {
            "available": 0,
            "used": 0
          },
          "tiering": {
            "control": "string",
            "object_stores": [
              {
                "name": "string"
              }
            ]
          },
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ]
    }
  ],
  "luns": [
    {
      "clone": {
        "source": {
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "comment": "string",
      "create_time": "2018-06-04 15:00:00 -0400",
      "lun_maps": [
        {
          "igroup": {
            "comment": "string",
            "igroups": [
              {
                "name": "igroup1",
```

```
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              }
            ],
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              {
                "comment": "my comment",
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              }
            ],
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          }
        }
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      "qos": {
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          "max_throughput_mbps": 500,
          "min_throughput_iops": 2000,
          "min_throughput_mbps": 500,
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
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        "used": 0
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    {
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      "name": "/vol/volume1/qtree1/namespace1",
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```

```
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        "nsid": "00000001h",
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    }
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    "name": "string",
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    }
  },
  "qos": {
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      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
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    }
  ],
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      "uuid": "string"
    }
  },
  "snapshot_policy": {
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    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
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```

```
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      "nas": {
        "cifs": {
          "shares": [
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              "comment": "HR Department Share",
              "dir_umask": 18,
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              "home_directory": true,
              "offline_files": "string",
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              "vscan_profile": "string"
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          "rules": [
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              "chown_mode": "string",
              "clients": [
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                }
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              "protocols": [
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              ],
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            }
          ]
```

```
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        },
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            "name": "string"
          }
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            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
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        "space": {
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          "used": 0
        },
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          "object_stores": [
            {
              "name": "string"
            }
          ]
        },
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      }
    ]
  }
```


Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262285	Consistency group does not support removing elements using a PATCH request.
2621761	Consistency groups with DP volumes are not supported on storage-limit enabled SVM.
53411842	Consistency group does not exist.
53411843	A consistency group with specified UUID was not found.
53411844	Specified consistency group was not found in the specified SVM.
53411845	The specified UUID and name refer to different consistency groups.
53411846	Either name or UUID must be provided.
53411852	A consistency group with the same identifier in the same scope exists.
53411853	Fields provided in the request conflict with each other.
53411856	Field provided is only supported when provisioning new objects.
53411857	LUNs that are not members of the application are not supported by this API. LUNs can be added to an application by adding the volume containing the LUNs to the application.
53411860	An object with the same identifier in the same scope exists.
53411861	The specified volume does not exist in provided volume array.
53411862	Modifying existing igroups is not supported using this API.
53411864	Request content insufficient to add an existing volume to an application.
53411865	Volumes contained in one consistency group cannot be added to a different consistency group.
53411866	LUNs are not supported on FlexGroup volumes.
53411867	LUN name is too long after appending a unique suffix.

Error Code	Description
53411869	Volume name is too long after appending a unique suffix.
53411870	When using the "round_robin" layout, the volume count must not be greater than the LUN count.
53411942	The application or component type of a consistency group that has an associated SnapMirror relationship cannot be changed.
53411959	Volumes with snapshot locking enabled cannot be added to a consistency group.
53412027	Failed to update the snapshot policy because the snapshot policies are not supported on the destination consistency group of SnapMirror active sync relationships.
53412056	The consistency group is not a FlexClone.
53412057	Consistency group split operation failed.
53412058	Failed to map or unmap because the consistency group consists of both 'luns' and 'namespaces'.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

application

Name	Type	Description
component_type	string	Nested consistency group tag.
type	string	Top level consistency group tag.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

parent_consistency_group

Consistency group that is to be cloned.

_links

parent_snapshot

Consistency group that is to be cloned.

Name	Type	Description
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume name suffix/prefix for the cloned volumes.

Name	Type	Description
prefix	string	Volume name prefix for cloned volumes.
suffix	string	Volume name suffix for cloned volumes.

clone

Creates a clone of an existing consistency group from the current contents or an existing snapshot.

Name	Type	Description
is_flexclone	boolean	Specifies if this consistency group is a FlexClone of a consistency group.
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
split_complete_percent	integer	Percentage of FlexClone blocks split from its parent consistency group.
split_estimate	integer	Space required to split the FlexClone consistency group.
split_initiated	boolean	Splits volumes after cloning. Defaults to false during POST. Only accepts true during a PATCH.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.
uuid	string	The unique identifier of the clone source LUN. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

Name	Type	Description
source	source	The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN. Valid in POST to create a new LUN as a clone of the source. Valid in PATCH to overwrite an existing LUN's data as a clone of another.

igroups

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.

policy

The QoS policy

Name	Type	Description
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

Name	Type	Description
policy	policy	The QoS policy

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH.
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.

Name	Type	Description
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform, and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

luns

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, you can consult the `state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
lun_maps	array[lun_maps]	An array of LUN maps. A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
space	space	The storage space related properties of the LUN.

Name	Type	Description
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not reduced using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.

Name	Type	Description
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

consistency_group_nvme_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

consistency_group_nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`.
They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	consistency_group_nvme_subsystem	An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

namespaces

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing

the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.

Name	Type	Description
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
provisioning_options	provisioning_options	Options that are applied to the operation.
space	space	The storage space related properties of the NVMe namespace.
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for either a collection GET or an instance GET unless explicitly requested using the `fields` query parameter.
uuid	string	The unique identifier of the NVMe namespace.

parent_consistency_group

The parent consistency group.

Name	Type	Description
name	string	The name of the consistency group.

Name	Type	Description
uuid	string	The unique identifier of the consistency group.

storage_service

Determines the placement of any storage object created during this operation.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
name	string	New name for consistency group. Required to resolve naming collisions.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

policy

The QoS policy

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot

A consistency group's snapshot

Name	Type	Description
name	string	The name of the consistency group's snapshot to restore to.
uuid	string	The UUID of the consistency group's snapshot to restore to.

restore_to

Use to restore a consistency group to a previous snapshot

Name	Type	Description
snapshot	snapshot	A consistency group's snapshot

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

space

Space information for the consistency group.

Name	Type	Description
available	integer	The amount of space available in the consistency group, in bytes.
size	integer	The total provisioned size of the consistency group, in bytes.
used	integer	The amount of space consumed in the consistency group, in bytes.

svm

The Storage Virtual Machine (SVM) in which the consistency group is located.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for volumes in this consistency group.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access

consistency_group_cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	Specifies whether all folders inside this share are visible to a user based on that individual user's access right; prevents the display of folders or other shared resources that the user does not have access to.
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.12 • x-nullable: true
dir_umask	integer	Directory mode creation mask to be viewed as an octal number.

Name	Type	Description
encryption	boolean	Specifies whether SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	integer	File mode creation mask to be viewed as an octal number.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow Unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specifies whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.

Name	Type	Description
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

cifs

Name	Type	Description
shares	array[consistency_group_cifs_share]	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.

Name	Type	Description
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

export_policy

The policy associated with volumes to export them for protocol access.

Name	Type	Description
id	integer	Identifier for the export policy.
name	string	Name of the export policy.
rules	array[export_rules]	The set of rules that govern the export policy.

junction_parent

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.

Name	Type	Description
uuid	string	Unique identifier for the parent volume.

nas

The CIFS share policy and/or export policies for this volume.

Name	Type	Description
cifs	cifs	
export_policy	export_policy	The policy associated with volumes to export them for protocol access.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
action	string	Operation to perform
count	integer	Number of elements to perform the operation on.
storage_service	storage_service	Determines the placement of any storage object created during this operation.

qos

The QoS policy for this volume.

Name	Type	Description
policy	policy	The QoS policy

space

Name	Type	Description
available	integer	The available space, in bytes.
size	integer	Total provisioned size, in bytes.

Name	Type	Description
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.

tiering

The tiering placement and policy definitions for this volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

volumes

Name	Type	Description
comment	string	A comment for the volume. Valid in POST or PATCH.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	The CIFS share policy and/or export policies for this volume.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	The QoS policy for this volume.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
space	space	

Name	Type	Description
tiering	tiering	The tiering placement and policy definitions for this volume.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.8 • x-nullable: true

consistency_groups

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency observed at the storage object, in microseconds.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency observed at the storage object, in microseconds.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance and capacity data.
used_space	integer	The total space used in the consistency group, in bytes.

replication_relationships

Name	Type	Description
is_protected_by_svm_dr	boolean	Indicates whether or not this consistency group is protected by SVM DR.
is_source	boolean	Indicates whether or not this consistency group is the source for replication.
uuid	string	The unique identifier of the SnapMirror relationship.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance and space numbers, such as, IOPS, latency, throughput, used space, and available space. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
available_space	integer	The total space available in the consistency group, in bytes.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
size	integer	The total size of the consistency group, in bytes.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.
used_space	integer	The total used space in the consistency group, in bytes.

consistency_group

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
application	application	

Name	Type	Description
clone	clone	Creates a clone of an existing consistency group from the current contents or an existing snapshot.
consistency_groups	array[consistency_groups]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A consistency group can only be associated with one direct parent consistency group.
luns	array[luns]	The LUNs array can be used to create or modify LUNs in a consistency group on a new or existing volume that is a member of the consistency group. LUNs are considered members of a consistency group if they are located on a volume that is a member of the consistency group. The maximum number of items for this array is 16.

Name	Type	Description
namespaces	array[namespaces]	An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the SVM using the NVMe over Fabrics protocol. In ONTAP, an NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. NVMe namespaces support being cloned. An NVMe namespace cannot be renamed, resized, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace. See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API. An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol. The maximum number of items for this array is 16. • minItems: 0 • uniqueItems: 1 • Introduced in: 9.10
parent_consistency_group	parent_consistency_group	The parent consistency group.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos	qos	

Name	Type	Description
replicated	boolean	Indicates whether or not replication has been enabled on this consistency group.
replication_relationships	array[replication_relationships]	Indicates the SnapMirror relationship of this consistency group.
replication_source	boolean	Since support for this field is to be removed in the next release, use replication_relationships.is_source instead.
restore_to	restore_to	Use to restore a consistency group to a previous snapshot
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
uuid	string	The unique identifier of the consistency group. The UUID is generated by ONTAP when the consistency group is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
vdisk_type	string	Type of objects in the consistency group.

Name	Type	Description
volumes	array[volumes]	A consistency group is a mutually exclusive aggregation of volumes or other consistency groups. A volume can only be associated with one direct parent consistency group. The volumes array can be used to create new volumes in the consistency group, add existing volumes to the consistency group, or modify existing volumes that are already members of the consistency group. The total number of volumes across all child consistency groups contained in a consistency group is constrained by the same limit.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve consistency group metrics

Application consistency-groups consistency_group.uuid metrics endpoint overview

Overview

Retrieves historical performance and capacity metrics for a consistency group.

Examples

Retrieving historical performance and space metrics for a consistency group for the past day

```
# The API:
/api/application/consistency-groups/{uuid}/metrics

# The call:
curl -X GET "https://<mgmt-ip>/api/application/consistency-
groups/{uuid}/metrics?interval=1d&fields=**" -H "accept:
application/hal+json"

# The response:
Snipped most of the records
{
"records": [
  {
    "uuid": "5069acd5-b325-11ed-a958-005056ac6b54",
    "timestamp": "2023-02-23T03:17:45Z",
    "status": "ok",
    "duration": "PT15S",
    "latency": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "iops": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "throughput": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "available_space": 862216192,
    "used_space": 1810432,
    "size": 864026624,
    "_links": {
```

```
      "self": {
        "href": "/api/application/consistency-groups/5069acd5-b325-11ed-
a958-005056ac6b54/metrics/2023-02-23T03%3A17%3A45Z?fields=**"
      }
    }
  },
  {
    "uuid": "5069acd5-b325-11ed-a958-005056ac6b54",
    "timestamp": "2023-02-23T02:18:00Z",
    "svm": {
      "name": "vs0",
      "uuid": "55b1a7b9-b2fb-11ed-a958-005056ac6b54"
    },
    "status": "partial_no_data",
    "duration": "PT15S",
    "latency": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "iops": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "throughput": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "available_space": 0,
    "used_space": 0,
    "size": 0,
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/5069acd5-b325-11ed-
a958-005056ac6b54/metrics/2023-02-23T02%3A18%3A00Z?fields=**"
      }
    }
  }
],
"num_records": 240,
"_links": {
```

```
  "self": {
    "href": "/api/application/consistency-groups/5069acd5-b325-11ed-a958-
005056ac6b54/metrics?fields=**"
  }
}
}
```

Retrieving historical metrics within a time range defined by timestamp

```
curl -X GET "https://<mgmt-ip>/api/application/consistency-
groups/{uuid}/metrics?fields=**&timestamp=2023-02-23T03:36:45Z..2023-02-
23T03:36:30Z" -H "accept: application/hal+json"

#### Response:
{
"records": [
{
  "uuid": "5069acd5-b325-11ed-a958-005056ac6b54",
  "timestamp": "2023-02-23T03:36:45Z",
  "svm": {
    "name": "vs0",
    "uuid": "55b1a7b9-b2fb-11ed-a958-005056ac6b54"
  },
  "status": "ok",
  "duration": "PT15S",
  "latency": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "available_space": 862183424,
  "used_space": 1843200,
```

```
  "size": 864026624,
  "_links": {
    "self": {
      "href": "/api/application/consistency-groups/5069acd5-b325-11ed-
a958-005056ac6b54/metrics/2023-02-23T03%3A36%3A45Z?fields=**"
    }
  }
},
{
  "uuid": "5069acd5-b325-11ed-a958-005056ac6b54",
  "timestamp": "2023-02-23T03:36:30Z",
  "svm": {
    "name": "vs0",
    "uuid": "55b1a7b9-b2fb-11ed-a958-005056ac6b54"
  },
  "status": "ok",
  "duration": "PT15S",
  "latency": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "available_space": 862183424,
  "used_space": 1843200,
  "size": 864026624,
  "_links": {
    "self": {
      "href": "/api/application/consistency-groups/5069acd5-b325-11ed-
a958-005056ac6b54/metrics/2023-02-23T03%3A36%3A30Z?fields=**"
    }
  }
}
],
```

```
"num_records": 2,
"_links": {
"self": {
  "href": "/api/application/consistency-groups/5069acd5-b325-11ed-a958-
005056ac6b54/metrics?fields=**&timestamp=2023-02-23T03:36:45Z..2023-02-
23T03:36:30Z"
}
}
}
```


Retrieve the historical performance and capacity metrics for a consistency group

GET `/application/consistency-groups/{consistency_group.uuid}/metrics`

Introduced In: 9.13

Retrieves historical performance and capacity metrics for a consistency group.

Parameters

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
used_space	integer	query	False	Filter by used_space
status	string	query	False	Filter by status

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
size	integer	query	False	Filter by size
available_space	integer	query	False	Filter by available_space
consistency_group.uuid	string	path	True	Unique identifier of the consistency group.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1w, 1m, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "available_space": 4096,
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "size": 4096,
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "used_space": 4096
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency observed at the storage object, in microseconds.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance and capacity numbers, such as, IOPS, latency, throughput, used space, and available space.

Name	Type	Description
_links	_links	
available_space	integer	The total space available in the consistency group, in bytes.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency observed at the storage object, in microseconds.
size	integer	The total size of the consistency group, in bytes.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance and capacity data.

Name	Type	Description
used_space	integer	The total space used in the consistency group, in bytes.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage application consistency group snapshots

Application consistency-groups consistency_group.uuid snapshots endpoint overview

Overview

Consistency groups support snapshot create, inventory, and restore. Snapshots can be created on a specified schedule or on-demand. On-demand snapshots can have a type of application consistent or crash consistent. Crash consistent is the default. Scheduled snapshotss are always crash consistent. There is no functional difference in ONTAP between crash consistent or application consistent snapshots.

The functionality provided by these APIs is not integrated with the host application. Snapshots have limited value without host coordination, so the use of the SnapCenter Backup Management suite is recommended to ensure correct interaction between host applications and ONTAP.

On-Demand Snapshots

A manual snapshot may be created on-demand for a parent consistency group and for any of the children consistency groups within it.

Scheduled and manual snapshot creation operations are subject to a pre-defined seven second internal timeout. If the snapshot creation operation does not complete within this time, it is aborted.

Individual volume snapshots within a consistency group snapshots can be accessed and used with native volume snapshot operations.

When an individual volume snapshot is deleted that is part of a consistency group snapshot, then that consistency group snapshot becomes invalid and which cannot be used for restoring the consistency group.

Restoring to a Previous Snapshot

A snapshot restores to a parent consistency group from an existing parent consistency group's snapshot. A snapshot restores to any of the children's consistency groups within it from an existing children's consistency group. Granular snapshots are supported. This is performed by a PATCH operation on the specific consistency group for the restore. An example is shown in PATCH /application/consistency-groups .

Any existing snapshots that were created chronologically after the time of the snapshot used in a successful restore operation is deleted, in compliance with existing ONTAP "future-snapshot" handling principles.

On failures during consistency group restores, any volumes that have been restored will remain so and will not be rolled back. The user must retry the failed restore operation until it is successful. The user can retry with consistency group restore or individual volume-granular restore.

Consistency group Snapshot APIs

The following APIs are used to perform operations related to consistency group snapshots:

– GET /api/application/consistency-groups/{consistency_group.uuid}/snapshots

– POST /api/application/consistency-groups/{consistency_group.uuid}/snapshots

– POST /api/application/consistency-groups/{consistency_group.uuid}/snapshots?action=start

– GET /api/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}

– PATCH /api/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}?action=commit

– DELETE /api/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}

Examples

Required properties

- `consistency_group.uuid` - Existing consistency group UUID in which to create the snapshot.

Retrieving the list of existing snapshots for a consistency group

Retrieves the list of consistency group granular snapshots for a specific consistency group.

```
curl -X GET 'https://<mgmt-ip>/api/application/consistency-
groups/92c6c770-17a1-11eb-b141-005056acd498/snapshots'

#### Response:
{
"records": [
  {
    "uuid": "92c6c770-17a1-11eb-b141-005056acd498",
    "name": "sa3s1",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/a8d0626a-17a0-11eb-
b141-005056acd498/snapshots/92c6c770-17a1-11eb-b141-005056acd498"
      }
    }
  },
  {
    "uuid": "c5a250ba-17a1-11eb-b141-005056acd498",
    "name": "sa3s2",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/a8d0626a-17a0-11eb-
b141-005056acd498/snapshots/c5a250ba-17a1-11eb-b141-005056acd498"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/application/consistency-groups/a8d0626a-17a0-11eb-b141-
005056acd498/snapshots"
  }
}
}
```

Retrieves details of a specific snapshot for a consistency group

Retrieves details for a specific snapshot in a consistency group.

```
curl -X GET 'https://<mgmt-ip>/api/application/consistency-
groups/92c6c770-17a1-11eb-b141-005056acd498/snapshots/a175c021-4199-11ec-
8674-005056accf3f'

#### Response:
{
"consistency_group": {
  "uuid": "ddabc6a5-4196-11ec-8674-005056accf3f",
  "name": "CG_1",
  "_links": {
    "self": {
      "href": "/api/application/consistency-groups/ddabc6a5-4196-11ec-
8674-005056accf3f"
    }
  }
},
"uuid": "a175c021-4199-11ec-8674-005056accf3f",
"name": "sa3s2",
"consistency_type": "crash",
"comment": "manually created snapshot",
"create_time": "2021-11-09T15:14:23-05:00",
"svm": {
  "uuid": "7379fecb-4195-11ec-8674-005056accf3f",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/7379fecb-4195-11ec-8674-005056accf3f"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/application/consistency-groups/ddabc6a5-4196-11ec-8674-
005056accf3f/snapshots/a175c021-4199-11ec-8674-005056accf3f"
  }
}
}
```

Retrieving bulk snapshots

Retrieves the list of consistency group granular snapshots for all consistency groups on the cluster.

```
curl -X GET 'https://<mgmt-ip>/api/application/consistency-
groups/*/snapshots'
```

```
#### Response:
{
"records": [
  {
    "consistency_group": {
      "uuid": "1218f900-c124-11ee-bbfe-005056acb65e",
      "name": "cg3",
      "_links": {
        "self": {
          "href": "/api/application/consistency-groups/1218f900-c124-11ee-
bbfe-005056acb65e"
        }
      }
    },
    "uuid": "7da4d364-c12e-11ee-bbfe-005056acb65e",
    "name": "cg3ss",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/1218f900-c124-11ee-
bbfe-005056acb65e/snapshots/7da4d364-c12e-11ee-bbfe-005056acb65e"
      }
    }
  },
  {
    "consistency_group": {
      "uuid": "15a8f66e-c124-11ee-bbfe-005056acb65e",
      "name": "cg2",
      "_links": {
        "self": {
          "href": "/api/application/consistency-groups/15a8f66e-c124-11ee-
bbfe-005056acb65e"
        }
      }
    },
    "uuid": "83595384-c12e-11ee-bbfe-005056acb65e",
    "name": "cg2ss",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/15a8f66e-c124-11ee-
bbfe-005056acb65e/snapshots/83595384-c12e-11ee-bbfe-005056acb65e"
      }
    }
  },
  {
    "consistency_group": {
      "uuid": "1c101d17-c124-11ee-bbfe-005056acb65e",
```

```
      "name": "cg1",
      "_links": {
        "self": {
          "href": "/api/application/consistency-groups/1c101d17-c124-11ee-
bbfe-005056acb65e"
        }
      }
    },
    "uuid": "87d0e49c-c12e-11ee-bbfe-005056acb65e",
    "name": "cg1ss",
    "_links": {
      "self": {
        "href": "/api/application/consistency-groups/1c101d17-c124-11ee-
bbfe-005056acb65e/snapshots/87d0e49c-c12e-11ee-bbfe-005056acb65e"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/application/consistency-groups/*/snapshots"
  }
}
}
```


Creating a crash-consistent snapshot of a consistency group

Creates an on-demand crash-consistent snapshot of an existing consistency group.

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots' -d '{ "name":
"name_of_this_snapshot", "consistency_type": "crash", "comment": "this is
a manually created on-demand snapshot", "snapmirror_label":
"my_special_sm_label" }' -H "accept: application/hal+json"

#### Response:
{
}
```

Creating a app-consistent snapshot of a consistency group

Creates an on-demand crash-consistent snapshot of an existing consistency group.

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots' -d '{ "name":
"name_of_this_snapshot", "consistency_type": "application", "comment":
"this is a manually created on-demand snapshot", "snapmirror_label":
"my_special_sm_label" }' -H "accept: application/hal+json"

#### Response:
{
}
```

Starting a two-phase crash-consistent snapshot creation for a consistency group

Starts a two-phase on-demand crash-consistent snapshot creation for an existing consistency group.

```
curl -X POST 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-
005056acd498/snapshots?action=start&action_timeout=7' -d '{ "name":
"name_of_this_snapshot", "consistency_type": "application", "comment":
"this is a manually created on-demand snapshot", "snapmirror_label":
"my_special_sm_label" }' -H "accept: application/hal+json"

#### Response:
Location: /api/application/consistency-groups/a8d0626a-17a0-11eb-b141-
005056acd498/snapshots/7aac0607-0c4d-11ee-ad32-005056a73101
{
}
```

Committing a previously started two-phase crash-consistent snapshot creation for a consistency group

Commits a previously started two-phase on-demand crash-consistent snapshot creation for an existing consistency group.

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots/7aac0607-0c4d-11ee-
ad32-005056a73101?action=commit' -H "accept: application/hal+json"

#### Response:
{
}
```

Deleting a snapshot from a consistency group

Deletes an existing snapshot from a consistency group.

```
curl -X DELETE 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots/92c6c770-17a1-11eb-
b141-005056acd498'

#### Response:
{
}
```

Retrieve consistency group snapshots

GET `/application/consistency-groups/{consistency_group.uuid}/snapshots`

Introduced In: 9.10

Retrieves snapshots for a consistency group.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See DOC Requesting specific fields to learn more.

- `is_partial`
- `missing_volumes.uuid`
- `missing_volumes.name`

Parameters

Name	Type	In	Required	Description
consistency_group.uuid	string	path	True	The unique identifier of the consistency group to retrieve.
namespaces.name	string	query	False	Filter by namespaces.name • Introduced in: 9.16
namespaces.uuid	string	query	False	Filter by namespaces.uuid • Introduced in: 9.16
create_time	string	query	False	Filter by create_time

Name	Type	In	Required	Description
name	string	query	False	Filter by name
uuid	string	query	False	Filter by uuid
consistency_type	string	query	False	Filter by consistency_type
snapmirror_label	string	query	False	Filter by snapmirror_label
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
reclaimable_space	integer	query	False	Filter by reclaimable_space • Introduced in: 9.16
snapshot_volumes.snapshot.name	string	query	False	Filter by snapshot_volumes.snapshot.name • Introduced in: 9.12
snapshot_volumes.snapshot.uuid	string	query	False	Filter by snapshot_volumes.snapshot.uuid • Introduced in: 9.12
snapshot_volumes.volume.uuid	string	query	False	Filter by snapshot_volumes.volume.uuid • Introduced in: 9.12
snapshot_volumes.volume.name	string	query	False	Filter by snapshot_volumes.volume.name • Introduced in: 9.12

Name	Type	In	Required	Description
write_fence	boolean	query	False	Filter by write_fence • Introduced in: 9.14
comment	string	query	False	Filter by comment
missing_namespaces.name	string	query	False	Filter by missing_namespaces.name • Introduced in: 9.16
missing_namespaces.uuid	string	query	False	Filter by missing_namespaces.uuid • Introduced in: 9.16
missing_volumes.uuid	string	query	False	Filter by missing_volumes.uuid
missing_volumes.name	string	query	False	Filter by missing_volumes.name
luns.name	string	query	False	Filter by luns.name • Introduced in: 9.16
luns.uuid	string	query	False	Filter by luns.uuid • Introduced in: 9.16
missing_luns.name	string	query	False	Filter by missing_luns.name • Introduced in: 9.16

Name	Type	In	Required	Description
missing_luns.uuid	string	query	False	Filter by missing_luns.uuid • Introduced in: 9.16
consistency_group.name	string	query	False	Filter by consistency_group.name
restore_size	integer	query	False	Filter by restore_size • Introduced in: 9.16
is_partial	boolean	query	False	Filter by is_partial
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "My snapshot comment",
      "consistency_group": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "my_consistency_group",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "consistency_type": "crash",
      "create_time": "2020-10-25 07:20:00 -0400",
      "is_partial": "",
      "luns": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "missing_luns": [
        {
          "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "missing_namespaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/namespace1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "missing_volumes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ],
      "name": "string",
      "namespaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/namespace1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "reclaimable_space": 0,
      "restore_size": 4096,
      "snapmirror_label": "sm_label",
      "snapshot_volumes": [
```

```
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "snapshot": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "this_snapshot",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "volume": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

consistency_group

The consistency group of the snapshot.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

Name	Type	Description
self	href	

luns

A reference to a LUN.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

lun_reference

A reference to a LUN.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

missing_namespaces

A reference to a namespace.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

volume_reference

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

namespaces

A reference to a namespace.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

snapshot_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volume_snapshot

Name	Type	Description
_links	self_link	
snapshot	snapshot_reference	
volume	volume_reference	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

records

Name	Type	Description
_links	self_link	
comment	string	Comment for the snapshot.
consistency_group	consistency_group	The consistency group of the snapshot.
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Time the snapshot copy was created
is_partial	boolean	Indicates whether the snapshot taken is partial or not.
luns	array[luns]	The list of LUNs in this snapshot.
missing_luns	array[lun_reference]	List of LUNs that are not in the snapshot.
missing_namespaces	array[missing_namespaces]	List of NVMe namespaces that are not in the snapshot.
missing_volumes	array[volume_reference]	List of volumes which are not in the snapshot.
name	string	Name of the snapshot.
namespaces	array[namespaces]	The list of NVMe namespaces in this snapshot.
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
restore_size	integer	Size of the consistency group if this snapshot is restored.
snapmirror_label	string	Snapmirror Label for the snapshot.

Name	Type	Description
snapshot_volumes	array[consistency_group_volume_snapshot]	List of volume and snapshot identifiers for each volume in the snapshot.
svm	svm_reference	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the snapshot. The UUID is generated by ONTAP when the snapshot is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
write_fence	boolean	Specifies whether a write fence will be taken when creating the snapshot. The default is false if there is only one volume in the consistency group, otherwise the default is true.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a consistency group snapshot

POST `/application/consistency-groups/{consistency_group.uuid}/snapshots`

Introduced In: 9.10

Creates a snapshot of an existing consistency group.

Required properties

- `consistency_group.uuid` - Existing consistency group UUID in which to create the snapshot.

Parameters

Name	Type	In	Required	Description
consistency_group.uuid	string	path	True	The unique identifier of the consistency group to retrieve.
action	string	query	False	Initiates the snapshot create operation. The start of the snapshot operation can optionally use a timeout value specified by "action_timeout". The snapshot is committed by calling PATCH on the snapshot href link with action specified as "commit". • Introduced in: 9.11 • enum: ["start"]

Name	Type	In	Required	Description
action_timeout	integer	query	False	Duration to complete the 2-phase snapshot operation. This also specifies the maximum duration that the write-fence remains in effect on the volumes associated with this consistency group. Default is 7 seconds with a valid range of 5 to 120 seconds. • Introduced in: 9.11
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	Comment for the snapshot.
consistency_group	consistency_group	The consistency group of the snapshot.
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Time the snapshot copy was created
is_partial	boolean	Indicates whether the snapshot taken is partial or not.
luns	array[luns]	The list of LUNs in this snapshot.
missing_luns	array[lun_reference]	List of LUNs that are not in the snapshot.
missing_namespaces	array[missing_namespaces]	List of NVMe namespaces that are not in the snapshot.
missing_volumes	array[volume_reference]	List of volumes which are not in the snapshot.
name	string	Name of the snapshot.
namespaces	array[namespaces]	The list of NVMe namespaces in this snapshot.

Name	Type	Description
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
restore_size	integer	Size of the consistency group if this snapshot is restored.
snapmirror_label	string	Snapmirror Label for the snapshot.
snapshot_volumes	array[consistency_group_volume_snapshot]	List of volume and snapshot identifiers for each volume in the snapshot.
svm	svm_reference	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the snapshot. The UUID is generated by ONTAP when the snapshot is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
write_fence	boolean	Specifies whether a write fence will be taken when creating the snapshot. The default is false if there is only one volume in the consistency group, otherwise the default is true.

Example request

```
{
  "comment": "My snapshot comment",
  "consistency_group": {
    "name": "my_consistency_group",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "consistency_type": "crash",
  "create_time": "2020-10-25 07:20:00 -0400",
  "is_partial": "",
  "luns": [
    {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_luns": [
    {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_namespaces": [
    {
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_volumes": [
    {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  ],
  "name": "string",
  "namespaces": [
    {
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "reclaimable_space": 0,
  "restore_size": 4096,
  "snapmirror_label": "sm_label",
  "snapshot_volumes": [
```

```
    {
      "snapshot": {
        "name": "this_snapshot",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "volume": {
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53411918	Snapshot operation not permitted.
53411921	Failed to create snapshot for consistency group.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

consistency_group

The consistency group of the snapshot.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

luns

A reference to a LUN.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

lun_reference

A reference to a LUN.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

missing_namespaces

A reference to a namespace.

Name	Type	Description
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

volume_reference

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

namespaces

A reference to a namespace.

Name	Type	Description
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

snapshot_reference

Name	Type	Description
name	string	
uuid	string	

consistency_group_volume_snapshot

Name	Type	Description
snapshot	snapshot_reference	
volume	volume_reference	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

consistency_group_snapshot

Name	Type	Description
comment	string	Comment for the snapshot.
consistency_group	consistency_group	The consistency group of the snapshot.
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Time the snapshot copy was created
is_partial	boolean	Indicates whether the snapshot taken is partial or not.
luns	array[luns]	The list of LUNs in this snapshot.
missing_luns	array[lun_reference]	List of LUNs that are not in the snapshot.
missing_namespaces	array[missing_namespaces]	List of NVMe namespaces that are not in the snapshot.
missing_volumes	array[volume_reference]	List of volumes which are not in the snapshot.
name	string	Name of the snapshot.

Name	Type	Description
namespaces	array[namespaces]	The list of NVMe namespaces in this snapshot.
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
restore_size	integer	Size of the consistency group if this snapshot is restored.
snapmirror_label	string	Snapmirror Label for the snapshot.
snapshot_volumes	array[consistency_group_volume_snapshot]	List of volume and snapshot identifiers for each volume in the snapshot.
svm	svm_reference	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the snapshot. The UUID is generated by ONTAP when the snapshot is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true
write_fence	boolean	Specifies whether a write fence will be taken when creating the snapshot. The default is false if there is only one volume in the consistency group, otherwise the default is true.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a consistency group snapshot

DELETE `/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}`

Introduced In: 9.10

Deletes a snapshot of a consistency group.

Examples

Parameters

Name	Type	In	Required	Description
consistency_group.uuid	string	path	True	The unique identifier of the snapshot of the consistency group to delete.
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53412007	Failed to delete the snapshot because it has not expired or is locked.
53412008	Failed to delete the consistency group snapshot because it is currently used as a reference for a replication relationship.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a consistency group snapshot

GET `/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}`

Introduced In: 9.10

Retrieves details of a specific snapshot for a consistency group.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See DOC Requesting specific fields to learn more.

- `is_partial`
- `missing_volumes.uuid`
- `missing_volumes.name`

Parameters

Name	Type	In	Required	Description
consistency_group.uuid	string	path	True	The unique identifier of the consistency group to retrieve.

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the snapshot of the consistency group to retrieve.
namespaces.name	string	query	False	Filter by namespaces.name • Introduced in: 9.16
namespaces.uuid	string	query	False	Filter by namespaces.uuid • Introduced in: 9.16
create_time	string	query	False	Filter by create_time
name	string	query	False	Filter by name
consistency_type	string	query	False	Filter by consistency_type
snapmirror_label	string	query	False	Filter by snapmirror_label
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
reclaimable_space	integer	query	False	Filter by reclaimable_space • Introduced in: 9.16
snapshot_volumes.snapshot.name	string	query	False	Filter by snapshot_volumes.snapshot.name • Introduced in: 9.12

Name	Type	In	Required	Description
snapshot_volumes.snapshot.uuid	string	query	False	Filter by snapshot_volumes.snapshot.uuid • Introduced in: 9.12
snapshot_volumes.volume.uuid	string	query	False	Filter by snapshot_volumes.volume.uuid • Introduced in: 9.12
snapshot_volumes.volume.name	string	query	False	Filter by snapshot_volumes.volume.name • Introduced in: 9.12
write_fence	boolean	query	False	Filter by write_fence • Introduced in: 9.14
comment	string	query	False	Filter by comment
missing_namespaces.name	string	query	False	Filter by missing_namespaces.name • Introduced in: 9.16
missing_namespaces.uuid	string	query	False	Filter by missing_namespaces.uuid • Introduced in: 9.16
missing_volumes.uuid	string	query	False	Filter by missing_volumes.uuid
missing_volumes.name	string	query	False	Filter by missing_volumes.name

Name	Type	In	Required	Description
luns.name	string	query	False	Filter by luns.name • Introduced in: 9.16
luns.uuid	string	query	False	Filter by luns.uuid • Introduced in: 9.16
missing_luns.name	string	query	False	Filter by missing_luns.name • Introduced in: 9.16
missing_luns.uuid	string	query	False	Filter by missing_luns.uuid • Introduced in: 9.16
consistency_group.name	string	query	False	Filter by consistency_group.name
restore_size	integer	query	False	Filter by restore_size • Introduced in: 9.16
is_partial	boolean	query	False	Filter by is_partial
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
comment	string	Comment for the snapshot.
consistency_group	consistency_group	The consistency group of the snapshot.
consistency_type	string	Consistency type. This is for categorization purposes only. A snapshot should not be set to 'application consistent' unless the host application is quiesced for the snapshot. Valid in POST.
create_time	string	Time the snapshot copy was created

Name	Type	Description
is_partial	boolean	Indicates whether the snapshot taken is partial or not.
luns	array[luns]	The list of LUNs in this snapshot.
missing_luns	array[lun_reference]	List of LUNs that are not in the snapshot.
missing_namespaces	array[missing_namespaces]	List of NVMe namespaces that are not in the snapshot.
missing_volumes	array[volume_reference]	List of volumes which are not in the snapshot.
name	string	Name of the snapshot.
namespaces	array[namespaces]	The list of NVMe namespaces in this snapshot.
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
restore_size	integer	Size of the consistency group if this snapshot is restored.
snapmirror_label	string	Snapmirror Label for the snapshot.
snapshot_volumes	array[consistency_group_volume_snapshot]	List of volume and snapshot identifiers for each volume in the snapshot.
svm	svm_reference	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the snapshot. The UUID is generated by ONTAP when the snapshot is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
write_fence	boolean	Specifies whether a write fence will be taken when creating the snapshot. The default is false if there is only one volume in the consistency group, otherwise the default is true.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "My snapshot comment",
  "consistency_group": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "my_consistency_group",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "consistency_type": "crash",
  "create_time": "2020-10-25 07:20:00 -0400",
  "is_partial": "",
  "luns": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_luns": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_namespaces": [
    {
      "_links": {
```

```
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "missing_volumes": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  ],
  "name": "string",
  "namespaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "reclaimable_space": 0,
  "restore_size": 4096,
  "snapmirror_label": "sm_label",
  "snapshot_volumes": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "snapshot": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "name": "this_snapshot",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

consistency_group

The consistency group of the snapshot.

Name	Type	Description
_links	self_link	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

_links

Name	Type	Description
self	href	

luns

A reference to a LUN.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

Name	Type	Description
uuid	string	The unique identifier of the LUN.

lun_reference

A reference to a LUN.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

missing_namespaces

A reference to a namespace.

Name	Type	Description
_links	_links	
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

volume_reference

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

namespaces

A reference to a namespace.

Name	Type	Description
_links	_links	
name	string	The name of an NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the NVMe namespace.

snapshot_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volume_snapshot

Name	Type	Description
_links	self_link	
snapshot	snapshot_reference	
volume	volume_reference	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Complete a consistency group snapshot operation

PATCH `/application/consistency-groups/{consistency_group.uuid}/snapshots/{uuid}`

Introduced In: 9.11

Completes a snapshot operation of a consistency group.

Example

Completing a snapshot operation

The following example shows how to complete the snapshot operation by committing an existing snapshot to disk:

```
curl -X PATCH https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots/92c6c770-17a1-11eb-
b141-005056acd498?action=commit
```

Response:

```
{
}
```

Modifying the SnapLock expiry time of a snapshot in SnapLock for SnapVault

The following example shows how to modify the SnapLock expiry time of a locked snapshot in SnapLock for SnapVault destination:

```
curl -X PATCH 'https://<mgmt-ip>/api/application/consistency-
groups/a8d0626a-17a0-11eb-b141-005056acd498/snapshots/92c6c770-17a1-11eb-
b141-005056acd498' -d '{"snaplock.expiry_time" : "2/28/2024 10:11:10
+05:30"}' -H "accept: application/hal+json"
```

Response:

```
{
  "job": {
    "uuid": "8c9cabf3-0a88-11ec-a449-005056bbcf9f",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/8c9cabf3-0a88-11ec-a449-005056bbcf9f"
      }
    }
  }
}
```

Parameters

Name	Type	In	Required	Description
consistency_group.uuid	string	path	True	Unique identifier of the consistency group's snapshot for deletion.
uuid	string	path	True	Snapshot UUID.
action	string	query	False	Commits the snapshot. The commit must be called within the timeout value specified during POST. If the commit is not called within the specified time, then the snapshot create operation is aborted. • enum: ["commit"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53411925	Failed to find a previously initiated two-phase snapshot operation for consistency group.
53412015	SnapLock expiry time cannot be before the current expiry time.
53412016	Snapshot is not retained by SnapLock.
53412017	The operation is not supported on this platform.</personalities>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve application templates

GET `/application/templates`

Introduced In: 9.6

Retrieves application templates.

Query examples

The most useful queries on this API allows searches by name or protocol access. The following query returns all templates that are used to provision an Oracle application.

```
GET /application/templates?name=ora*
```

Similarly, the following query returns all templates that support SAN access.

```
GET /application/templates?protocol=san
```

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
protocol	string	query	False	Filter by protocol
description	string	query	False	Filter by description
missing_prerequisites	string	query	False	Filter by missing_prerequisites
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[application_template]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "description": "string",
      "missing_prerequisites": "string",
      "name": "string",
      "nas": {
        "application_components": [
          {}
        ],
        "cifs_access": [
          {
            "access": "string",
            "user_or_group": "string"
          }
        ],
        "cifs_share_name": "string",
        "exclude_aggregates": [
          {
            "name": "string",
            "uuid": "string"
          }
        ],
        "nfs_access": [
          {
            "access": "string",
            "host": "string"
          }
        ],
        "protection_type": {
```

```
          "local_policy": "string",
          "local_rpo": "string",
          "remote_rpo": "string"
        }
      },
      "nvme": {
        "components": [
          {
            "name": "string",
            "os_type": "string",
            "performance": {
              "storage_service": {
                "name": "string"
              }
            },
            "qos": {
              "policy": {
                "name": "string",
                "uuid": "string"
              }
            },
            "subsystem": {
              "hosts": [
                {
                  "dh_hmac_chap": {
                    "group_size": "string",
                    "hash_function": "string"
                  },
                  "nqn": "string",
                  "priority": "string"
                }
              ],
              "name": "string",
              "os_type": "string",
              "uuid": "string"
            },
            "tiering": {
              "policy": "string"
            }
          }
        ],
        "os_type": "string",
        "rpo": {
          "local": {
            "name": "string",
            "policy": "string"
```

```
          },
          "remote": {
            "name": "string"
          }
        }
      },
      "protocol": "string",
      "s3_bucket": {
        "application_components": [
          {
            "access_policies": [
              {
                "actions": [
                  "string"
                ],
                "conditions": [
                  {
                    "delimiters": [
                      "string"
                    ],
                    "max_keys": [
                      "integer"
                    ],
                    "operator": "string",
                    "prefixes": [
                      "string"
                    ],
                    "source_ips": [
                      "string"
                    ],
                    "usernames": [
                      "string"
                    ]
                  }
                ],
                "effect": "string",
                "principals": [
                  "string"
                ],
                "resources": [
                  "string"
                ],
                "sid": "string"
              }
            ],
            "bucket_endpoint_type": "string",
```

```
            "comment": "string",
            "default_retention_period": "string",
            "exclude_aggregates": [
              {
                "name": "string",
                "uuid": "string"
              }
            ],
            "name": "string",
            "nas_path": "string",
            "qos": {
              "policy": {
                "name": "string",
                "uuid": "string"
              }
            },
            "retention_mode": "string",
            "snapshot_policy": {
              "name": "string",
              "uuid": "string"
            },
            "storage_service": {
              "name": "string"
            },
            "uuid": "string",
            "versioning_state": "string"
          }
        ],
        "protection_type": {
          "remote_rpo": "string"
        }
      },
      "san": {
        "application_components": [
          {
            "igroup_name": "string",
            "name": "string",
            "os_type": "string",
            "qos": {
              "policy": {
                "name": "string",
                "uuid": "string"
              }
            },
            "storage_service": {
              "name": "string"
```

```
            },
            "tiering": {
              "policy": "string"
            }
          }
        ],
        "exclude_aggregates": [
          {
            "name": "string",
            "uuid": "string"
          }
        ],
        "os_type": "string",
        "protection_type": {
          "local_policy": "string",
          "local_rpo": "string",
          "remote_rpo": "string"
        }
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
element_count	integer	The number of storage elements (LUNs for SAN) of the database to maintain. Must be an even number between 2 and 16. Odd numbers will be rounded up to the next even number within range.
replication_factor	integer	The number of data bearing members of the replicaset, including 1 primary and at least 1 secondary.
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

initiator_objects

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
os_type	string	The name of the host OS running the application.
primary_igroup_name	string	The initiator group for the primary.
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

Name	Type	Description
id	integer	The ID of an existing NFS export policy.

Name	Type	Description
name	string	The name of an existing NFS export policy.

component

Name	Type	Description
name	string	Name of the source component.

svm

Name	Type	Description
name	string	Name of the source SVM.

origin

Name	Type	Description
component	component	
svm	svm	

flexcache

Name	Type	Description
dr_cache	boolean	Dr-cache is a FlexCache volume create time option that has the same flexgroup-msid as that of the origin of a FlexCache volume. By default, dr-cache is disabled. The flexgroup-msid of the FlexCache volume does not need to be same as that of the origin of a FlexCache volume.
origin	origin	

policy

Name	Type	Description
name	string	The name of an existing QoS policy.
uuid	string	The UUID of an existing QoS policy. Usage: <UUID>

qos

Name	Type	Description
policy	policy	

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as quot;Plt;num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".
retention	retention	
snaplock_type	string	The SnapLock type of the smart container.

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

nas_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
export_policy	export_policy	
flexcache	flexcache	
name	string	The name of the application component.
qos	qos	
scale_out	boolean	Denotes a Flexgroup.
share_count	integer	The number of shares in the application component.
snaplock	snaplock	
snapshot_locking_enabled	boolean	Indicates whether Snapshot copy locking is enabled on the volume.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
access	string	The CIFS access granted to the user or group.
user_or_group	string	The name of the CIFS user or group that will be granted access.

exclude_aggregates

Name	Type	Description
name	string	The name of the aggregate to exclude. Usage: <aggregate name>
uuid	string	The ID of the aggregate to exclude. Usage: <UUID>

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

Name	Type	Description
access	string	The NFS access granted.
host	string	The name of the NFS entity granted access.

protection_type

Name	Type	Description
local_policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
cifs_access	array[app_cifs_access]	The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
cifs_share_name	string	The name of the CIFS share. Usage: <Share>
exclude_aggregates	array[exclude_aggregates]	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	

Name	Type	Description
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.
os_type	string	The name of the host OS running the application.
performance	performance	
qos	qos	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering

Name	Type	Description
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.
policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>

remote

Name	Type	Description
name	string	The remote RPO of the application.

rpo

Name	Type	Description
local	local	
remote	remote	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
os_type	string	The name of the host OS running the application.
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
mirrored	boolean	Specifies whether the redo log group should be mirrored.
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
ora_home	ora_home	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
copies	integer	The number of CRS volumes.

Name	Type	Description
size	integer	The size of the Oracle CRS/voting storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
ora_home	ora_home	
oracle_crs	oracle_crs	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
operator	string	Policy Condition Operator.
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
conditions	array[zapp_s3_bucket_application_components_access_policies_conditions]	conditions.
effect	string	Allow or Deny Access.
principals	array[string]	

Name	Type	Description
resources	array[string]	
sid	string	Statement Identifier Usage: <(size 1..256)>

snapshot_policy

Name	Type	Description
name	string	The name of the snapshot policy that is used for the S3 bucket.
uuid	string	The UUID of the snapshot policy that is used for the S3 bucket. Usage: <UUID>

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
access_policies	array[zapp_s3_bucket_application_components_access_policies]	The list of S3 objectstore policies to be created.
bucket_endpoint_type	string	The type of bucket.
capacity_tier	boolean	Prefer lower latency storage under similar media costs.
comment	string	Object Store Server Bucket Description Usage: <(size 1..256)>

Name	Type	Description
default_retention_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as quot;Plt;num>Y" and quot;Plt;num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported. Usage: {{<integer> days|years} | none}
exclude_aggregates	array[exclude_aggregates]	
name	string	The name of the application component.
nas_path	string	The path to which the bucket corresponds to.
qos	qos	
retention_mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking. For s3 type buckets, the default value is no_lock.

Name	Type	Description
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
snapshot_policy	snapshot_policy	
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>
versioning_state	string	Bucket Versioning State. For nas type buckets, this field is not set. For s3 type buckets, the default value is disabled.

protection_type

Name	Type	Description
remote_rpo	string	The remote RPO of the application.

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.
protection_type	protection_type	

san_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
qos	qos	
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
exclude_aggregates	array[exclude_aggregates]	
os_type	string	The name of the host OS running the application.

Name	Type	Description
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

access

Name	Type	Description
installer	string	SQL installer admin user name.
service_account	string	SQL service account user name.

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
access	access	

Name	Type	Description
db	db	
log	log	
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
size	integer	The size of the desktops. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

hyper_v_access

Name	Type	Description
service_account	string	Hyper-V service account.

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
size	integer	The size of the datastore. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

application_template

Application templates

Name	Type	Description
_links	self_link	
description	string	Description.

Name	Type	Description
missing_prerequisites	string	Missing prerequisites.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Template name.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protocol	string	Access protocol.
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an application template

GET `/application/templates/{name}`

Introduced In: 9.6

Retrieves an application template.

Template properties

Each application template has a set of properties. These properties are always nested under a property with the same name as the template. For example, when using the `s3_bucket` template, the properties are found nested inside the `s3_bucket` property. The properties nested under the template property are all specific to the template. The model for the application template object includes all the available templates, but only the object that corresponds to the template's name is returned, and only one is provided in any application API.

The model of each template includes a description of each property and its allowed values or usage. Default values are also indicated when available. The template properties returned by this API include an example value for each property.

Template prerequisites

Each template has a set of prerequisites required for its use. If any of these prerequisites are not met, the `missing_prerequisites` property indicates which prerequisite is missing.

Learn more

- DOC /application

Parameters

Name	Type	In	Required	Description
name	string	path	True	Template Name

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
description	string	Description.
missing_prerequisites	string	Missing prerequisites.
mongo_db_on_san	mongo_db_on_san	MongoDB using SAN.
name	string	Template name.
nas	nas	A generic NAS application.
nvme	zapp_nvme	An NVME application.
oracle_on_nfs	oracle_on_nfs	Oracle using NFS.
oracle_on_san	oracle_on_san	Oracle using SAN.
oracle_rac_on_nfs	oracle_rac_on_nfs	Oracle RAC using NFS.
oracle_rac_on_san	oracle_rac_on_san	Oracle RAC using SAN.
protocol	string	Access protocol.
s3_bucket	zapp_s3_bucket	A generic S3 bucket application.
san	san	A generic SAN application.
sql_on_san	sql_on_san	Microsoft SQL using SAN.
sql_on_smb	sql_on_smb	Microsoft SQL using SMB.
vdi_on_nas	vdi_on_nas	A VDI application using NAS.

Name	Type	Description
vdi_on_san	vdi_on_san	A VDI application using SAN.
vsi_on_nas	vsi_on_nas	A VSI application using NAS.
vsi_on_san	vsi_on_san	A VSI application using SAN.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "string",
  "missing_prerequisites": "string",
  "name": "string",
  "nas": {
    "application_components": [
      {}
    ],
    "cifs_access": [
      {
        "access": "string",
        "user_or_group": "string"
      }
    ],
    "cifs_share_name": "string",
    "exclude_aggregates": [
      {
        "name": "string",
        "uuid": "string"
      }
    ],
    "nfs_access": [
      {
        "access": "string",
        "host": "string"
      }
    ],
    "protection_type": {
      "local_policy": "string",
      "local_rpo": "string",
      "remote_rpo": "string"
    }
  },
  "nvme": {
    "components": [
      {
        "name": "string",
        "os_type": "string",
        "performance": {
```

```
          "storage_service": {
            "name": "string"
          }
        },
        "qos": {
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "subsystem": {
          "hosts": [
            {
              "dh_hmac_chap": {
                "group_size": "string",
                "hash_function": "string"
              },
              "nqn": "string",
              "priority": "string"
            }
          ],
          "name": "string",
          "os_type": "string",
          "uuid": "string"
        },
        "tiering": {
          "policy": "string"
        }
      }
    ],
    "os_type": "string",
    "rpo": {
      "local": {
        "name": "string",
        "policy": "string"
      },
      "remote": {
        "name": "string"
      }
    }
  },
  "protocol": "string",
  "s3_bucket": {
    "application_components": [
      {
        "access_policies": [
```

```
        {
          "actions": [
            "string"
          ],
          "conditions": [
            {
              "delimiters": [
                "string"
              ],
              "max_keys": [
                "integer"
              ],
              "operator": "string",
              "prefixes": [
                "string"
              ],
              "source_ips": [
                "string"
              ],
              "usernames": [
                "string"
              ]
            }
          ],
          "effect": "string",
          "principals": [
            "string"
          ],
          "resources": [
            "string"
          ],
          "sid": "string"
        }
      ],
      "bucket_endpoint_type": "string",
      "comment": "string",
      "default_retention_period": "string",
      "exclude_aggregates": [
        {
          "name": "string",
          "uuid": "string"
        }
      ],
      "name": "string",
      "nas_path": "string",
      "qos": {
```

```
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "retention_mode": "string",
        "snapshot_policy": {
          "name": "string",
          "uuid": "string"
        },
        "storage_service": {
          "name": "string"
        },
        "uuid": "string",
        "versioning_state": "string"
      }
    ],
    "protection_type": {
      "remote_rpo": "string"
    }
  },
  "san": {
    "application_components": [
      {
        "igroup_name": "string",
        "name": "string",
        "os_type": "string",
        "qos": {
          "policy": {
            "name": "string",
            "uuid": "string"
          }
        },
        "storage_service": {
          "name": "string"
        },
        "tiering": {
          "policy": "string"
        }
      }
    ],
    "exclude_aggregates": [
      {
        "name": "string",
        "uuid": "string"
      }
```

```
    ],
    "os_type": "string",
    "protection_type": {
      "local_policy": "string",
      "local_rpo": "string",
      "remote_rpo": "string"
    }
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

storage_service

Name	Type	Description
name	string	The storage service of the database.

dataset

Name	Type	Description
element_count	integer	The number of storage elements (LUNs for SAN) of the database to maintain. Must be an even number between 2 and 16. Odd numbers will be rounded up to the next even number within range.
replication_factor	integer	The number of data bearing members of the replicaset, including 1 primary and at least 1 secondary.
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

igroups

initiator_objects

mongo_db_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

protection_type

Name	Type	Description
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

secondary_igroups

Name	Type	Description
name	string	The name of the initiator group for each secondary.

mongo_db_on_san

MongoDB using SAN.

Name	Type	Description
dataset	dataset	
os_type	string	The name of the host OS running the application.
primary_igroup_name	string	The initiator group for the primary.
protection_type	protection_type	
secondary_igroups	array[secondary_igroups]	

export_policy

Name	Type	Description
id	integer	The ID of an existing NFS export policy.
name	string	The name of an existing NFS export policy.

component

Name	Type	Description
name	string	Name of the source component.

svm

Name	Type	Description
name	string	Name of the source SVM.

origin

Name	Type	Description
component	component	
svm	svm	

flexcache

Name	Type	Description
dr_cache	boolean	Dr-cache is a FlexCache volume create time option that has the same flexgroup-msid as that of the origin of a FlexCache volume. By default, dr-cache is disabled. The flexgroup-msid of the FlexCache volume does not need to be same as that of the origin of a FlexCache volume.
origin	origin	

policy

Name	Type	Description
name	string	The name of an existing QoS policy.
uuid	string	The UUID of an existing QoS policy. Usage: <UUID>

qos

Name	Type	Description
policy	policy	

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as quot;Plt;num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".
retention	retention	
snaplock_type	string	The SnapLock type of the smart container.

storage_service

Name	Type	Description
name	string	The storage service of the application component.

object_stores

nas_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
export_policy	export_policy	
flexcache	flexcache	
name	string	The name of the application component.
qos	qos	
scale_out	boolean	Denotes a Flexgroup.
share_count	integer	The number of shares in the application component.
snaplock	snaplock	
snapshot_locking_enabled	boolean	Indicates whether Snapshot copy locking is enabled on the volume.
storage_service	storage_service	
tiering	nas_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member shares. Usage: {<integer>[KB|MB|GB|TB|PB]}

app_cifs_access

The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
access	string	The CIFS access granted to the user or group.
user_or_group	string	The name of the CIFS user or group that will be granted access.

exclude_aggregates

Name	Type	Description
name	string	The name of the aggregate to exclude. Usage: <aggregate name>
uuid	string	The ID of the aggregate to exclude. Usage: <UUID>

app_nfs_access

The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.

Name	Type	Description
access	string	The NFS access granted.
host	string	The name of the NFS entity granted access.

protection_type

Name	Type	Description
local_policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>
local_rpo	string	The local RPO of the application.
remote_rpo	string	The remote RPO of the application.

nas

A generic NAS application.

Name	Type	Description
application_components	array[application_components]	
cifs_access	array[app_cifs_access]	The list of CIFS access controls. You must provide either 'user_or_group' or 'access' to enable CIFS access.

Name	Type	Description
cifs_share_name	string	The name of the CIFS share. Usage: <Share>
exclude_aggregates	array[exclude_aggregates]	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

performance

Name	Type	Description
storage_service	storage_service	

dh_hmac_chap

Name	Type	Description
group_size	string	Authentication Diffie-Hellman Group.
hash_function	string	Authentication Hash Function.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	
nqn	string	The host NQN.
priority	string	Host Priority.

zapp_nvme_components_subsystem

components.subsystem

Name	Type	Description
hosts	array[hosts]	

Name	Type	Description
name	string	The name of the subsystem accessing the component. If neither the name nor the UUID is provided, the name defaults to <application-name>_<component-name>, whether that subsystem already exists or not.
os_type	string	The name of the host OS accessing the component. The default value is the host OS that is running the application.
uuid	string	The UUID of an existing subsystem to be granted access to the component.

zapp_nvme_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

components

Name	Type	Description
name	string	The name of the application component.
namespace_count	integer	The number of namespaces supported per request, with a total limit of 1024 per volume.
os_type	string	The name of the host OS running the application.
performance	performance	
qos	qos	
subsystem	zapp_nvme_components_subsystem	components.subsystem
tiering	zapp_nvme_components_tiering	application-components.tiering

Name	Type	Description
total_size	integer	The total size of the component, spread across member namespaces. Usage: {<integer>[KB|MB|GB|TB|PB]}

local

Name	Type	Description
name	string	The local RPO of the application.
policy	string	The Snapshot copy policy to apply to each volume in the smart container. This property is only supported for smart containers. Usage: <snapshot policy>

remote

Name	Type	Description
name	string	The remote RPO of the application.

rpo

Name	Type	Description
local	local	
remote	remote	

zapp_nvme

An NVME application.

Name	Type	Description
components	array[components]	
os_type	string	The name of the host OS running the application.
rpo	rpo	

storage_service

Name	Type	Description
name	string	The storage service of the archive log.

archive_log

Name	Type	Description
size	integer	The size of the archive log. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

db

Name	Type	Description
size	integer	The size of the database. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the ORACLE_HOME storage volume.

ora_home

Name	Type	Description
size	integer	The size of the ORACLE_HOME storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the redo log group.

redo_log

Name	Type	Description
mirrored	boolean	Specifies whether the redo log group should be mirrored.
size	integer	The size of the redo log group. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_on_nfs

Oracle using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
protection_type	protection_type	
redo_log	redo_log	

oracle_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_on_san

Oracle using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
ora_home	ora_home	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle grid binary storage volume.

grid_binary

Name	Type	Description
size	integer	The size of the Oracle grid binary storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the Oracle CRS volume.

oracle_crs

Name	Type	Description
copies	integer	The number of CRS volumes.

Name	Type	Description
size	integer	The size of the Oracle CRS/voting storage volume. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

oracle_rac_on_nfs

Oracle RAC using NFS.

Name	Type	Description
archive_log	archive_log	
db	db	
grid_binary	grid_binary	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
ora_home	ora_home	
oracle_crs	oracle_crs	
protection_type	protection_type	
redo_log	redo_log	

db_sids

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.

oracle_rac_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

oracle_rac_on_san

Oracle RAC using SAN.

Name	Type	Description
archive_log	archive_log	
db	db	
db_sids	array[db_sids]	
grid_binary	grid_binary	
ora_home	ora_home	
oracle_crs	oracle_crs	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
redo_log	redo_log	

zapp_s3_bucket_application_components_access_policies_conditions

conditions

Name	Type	Description
delimiters	array[string]	
max_keys	array[integer]	
operator	string	Policy Condition Operator.
prefixes	array[string]	
source_ips	array[string]	
usernames	array[string]	

zapp_s3_bucket_application_components_access_policies

The list of S3 objectstore policies to be created.

Name	Type	Description
actions	array[string]	
conditions	array[zapp_s3_bucket_application_components_access_policies_conditions]	conditions.
effect	string	Allow or Deny Access.
principals	array[string]	

Name	Type	Description
resources	array[string]	
sid	string	Statement Identifier Usage: <(size 1..256)>

snapshot_policy

Name	Type	Description
name	string	The name of the snapshot policy that is used for the S3 bucket.
uuid	string	The UUID of the snapshot policy that is used for the S3 bucket. Usage: <UUID>

zapp_s3_bucket_application_components

The list of application components to be created.

Name	Type	Description
access_policies	array[zapp_s3_bucket_application_components_access_policies]	The list of S3 objectstore policies to be created.
bucket_endpoint_type	string	The type of bucket.
capacity_tier	boolean	Prefer lower latency storage under similar media costs.
comment	string	Object Store Server Bucket Description Usage: <(size 1..256)>

Name	Type	Description
default_retention_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as quot;Plt;num>Y" and quot;Plt;num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported. Usage: {{<integer> days|years} | none}
exclude_aggregates	array[exclude_aggregates]	
name	string	The name of the application component.
nas_path	string	The path to which the bucket corresponds to.
qos	qos	
retention_mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking. For s3 type buckets, the default value is no_lock.

Name	Type	Description
size	integer	The total size of the S3 Bucket, split across the member components. Usage: {<integer>[KB|MB|GB|TB|PB]}
snapshot_policy	snapshot_policy	
storage_service	storage_service	
uuid	string	Object Store Server Bucket UUID Usage: <UUID>
versioning_state	string	Bucket Versioning State. For nas type buckets, this field is not set. For s3 type buckets, the default value is disabled.

protection_type

Name	Type	Description
remote_rpo	string	The remote RPO of the application.

zapp_s3_bucket

A generic S3 bucket application.

Name	Type	Description
application_components	array[zapp_s3_bucket_application_components]	The list of application components to be created.
protection_type	protection_type	

san_application_components_tiering

application-components.tiering

Name	Type	Description
policy	string	The storage tiering type of the application component.

application_components

Name	Type	Description
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
lun_count	integer	The number of LUNs in the application component.
name	string	The name of the application component.
os_type	string	The name of the host OS running the application.
qos	qos	
storage_service	storage_service	
tiering	san_application_components_tiering	application-components.tiering
total_size	integer	The total size of the application component, split across the member LUNs. Usage: {<integer>[KB|MB|GB|TB|PB]}

san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

san

A generic SAN application.

Name	Type	Description
application_components	array[application_components]	
exclude_aggregates	array[exclude_aggregates]	
os_type	string	The name of the host OS running the application.

Name	Type	Description
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the DB.

db

Name	Type	Description
size	integer	The size of the DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

storage_service

Name	Type	Description
name	string	The storage service of the log DB.

log

Name	Type	Description
size	integer	The size of the log DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

storage_service

Name	Type	Description
name	string	The storage service of the temp DB.

temp_db

Name	Type	Description
size	integer	The size of the temp DB. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

sql_on_san

Microsoft SQL using SAN.

Name	Type	Description
db	db	
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
log	log	
os_type	string	The name of the host OS running the application.
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

access

Name	Type	Description
installer	string	SQL installer admin user name.
service_account	string	SQL service account user name.

sql_on_smb

Microsoft SQL using SMB.

Name	Type	Description
access	access	

Name	Type	Description
db	db	
log	log	
protection_type	protection_type	
server_cores_count	integer	The number of server cores for the DB.
temp_db	temp_db	

storage_service

Name	Type	Description
name	string	The storage service of the desktops.

desktops

Name	Type	Description
count	integer	The number of desktops to support.
size	integer	The size of the desktops. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

hyper_v_access

Name	Type	Description
service_account	string	Hyper-V service account.

vdi_on_nas

A VDI application using NAS.

Name	Type	Description
desktops	desktops	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vdi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vdi_on_san

A VDI application using SAN.

Name	Type	Description
desktops	desktops	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

storage_service

Name	Type	Description
name	string	The storage service of the datastore.

datastore

Name	Type	Description
count	integer	The number of datastores to support.
size	integer	The size of the datastore. Usage: {<integer>[KB|MB|GB|TB|PB]}
storage_service	storage_service	

vsi_on_nas

A VSI application using NAS.

Name	Type	Description
datastore	datastore	
hyper_v_access	hyper_v_access	
nfs_access	array[app_nfs_access]	The list of NFS access controls. You must provide either 'host' or 'access' to enable NFS access.
protection_type	protection_type	

vsi_on_san_new_igroups

The list of initiator groups to create.

Name	Type	Description
initiators	array[string]	

vsi_on_san

A VSI application using SAN.

Name	Type	Description
datastore	datastore	
hypervisor	string	The name of the hypervisor hosting the application.
igroup_name	string	The name of the initiator group through which the contents of this application will be accessed. Modification of this parameter is a disruptive operation. All LUNs in the application component will be unmapped from the current igroup and re-mapped to the new igroup.
protection_type	protection_type	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Storage cluster metrics

Storage cluster metrics endpoint overview

Overview

Retrieves cluster-wide historical capacity metrics.

Examples

Retrieving cluster-wide historical space metrics for the past day

```
# The API:
/api/storage/cluster/metrics

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/cluster/metrics?interval=1d&fields=**" -H "accept:
application/hal+json"

# The response:
Snipped most of the records
{
"records": [
  {
    "uuid": "03ca3ef6-8173-11ef-825d-005056bb2d85",
    "timestamp": "2024-10-07T03:17:45Z",
    "status": "ok",
    "duration": "PT15S",
    "available_space": 862216192,
    "used_space": 1810432,
    "size": 864026624,
    "_links": {
      "self": {
```

```
        "href": "/api/storage/cluster/metrics/2024-10-
07T03%3A17%3A45Z?fields=**"
      }
    }
  },
  {
    "uuid": "03ca3ef6-8173-11ef-825d-005056bb2d85",
    "timestamp": "2024-10-07T02:18:00Z",
    "status": "partial_no_data",
    "duration": "PT15S",
    "available_space": 0,
    "used_space": 0,
    "size": 0,
    "_links": {
      "self": {
        "href": "/api/storage/cluster/metrics/2024-10-
07T02%3A18%3A00Z?fields=**"
      }
    }
  }
],
"num_records": 240,
"_links": {
  "self": {
    "href": "/api/storage/cluster/metrics?fields=**"
  }
}
}
```


Retrieving historical metrics within a time range defined by timestamp

```
curl -X GET "https://<mgmt-
ip>/api/storage/cluster/metrics?fields=**&timestamp=2024-10-
07T03:36:45Z..2024-10-07T03:36:30Z" -H "accept: application/hal+json"

#### Response:
{
"records": [
{
  "uuid": "03ca3ef6-8173-11ef-825d-005056bb2d85",
  "timestamp": "2024-10-07T03:36:45Z",
  "status": "ok",
  "duration": "PT15S",
  "available_space": 862183424,
  "used_space": 1843200,
```

```
  "size": 864026624,
  "_links": {
    "self": {
      "href": "/api/storage/cluster/metrics/2024-10-
07T03%3A36%3A45Z?fields=**"
    }
  }
},
{
  "uuid": "03ca3ef6-8173-11ef-825d-005056bb2d85",
  "timestamp": "2024-10-07T03:36:30Z",
  "status": "ok",
  "duration": "PT15S",
  "available_space": 862183424,
  "used_space": 1843200,
  "size": 864026624,
  "_links": {
    "self": {
      "href": "/api/storage/cluster/metrics/2024-10-
07T03%3A36%3A30Z?fields=**"
    }
  }
}
],
"num_records": 2,
"_links": {
"self": {
  "href": "/api/storage/cluster/metrics?fields=**&timestamp=2024-10-
07T03:36:45Z..2024-10-07T03:36:30Z"
}
}
}
```


Cloud

Cloud overview

Manages cloud (object storage) targets

Manage cloud targets

Cloud targets endpoint overview

Retrieving a collection of cloud targets

The cloud targets GET API retrieves all cloud targets defined in the cluster.

Creating cloud targets

The cluster administrator tells ONTAP how to connect to a cloud target. The following pre-requisites must be met before creating an object store configuration in ONTAP.
A valid data bucket or container must be created with the object store provider. This assumes that the user has valid account credentials with the object store provider to access the data bucket.
The ONTAP node must be able to connect to the object store.

This includes:

- Fast, reliable connectivity to the object store.
- An inter-cluster LIF (logical interface) must be configured on the cluster. ONTAP verifies connectivity prior to saving this configuration information.
- If SSL/TLS authentication is required, then valid certificates must be installed.
- FabricPool license (required for all object stores except SGWS).

Deleting cloud targets

If a cloud target is used by an aggregate, then the aggregate must be deleted before the cloud target can be deleted.

Retrieve cloud targets in the cluster

GET `/cloud/targets`

Introduced In: 9.6

Retrieves the collection of cloud targets in the cluster.

Related ONTAP commands

- `storage aggregate object-store config show`
- `snapmirror object-store config show`

Parameters

Name	Type	In	Required	Description
server	string	query	False	Filter by server
owner	string	query	False	Filter by owner
authentication_type	string	query	False	Filter by authentication_type
container	string	query	False	Filter by container

Name	Type	In	Required	Description
use_http_proxy	boolean	query	False	Filter by use_http_proxy • Introduced in: 9.7
url_style	string	query	False	Filter by url_style • Introduced in: 9.8
access_key	string	query	False	Filter by access_key
ssl_enabled	boolean	query	False	Filter by ssl_enabled
used	integer	query	False	Filter by used
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
cluster.uuid	string	query	False	Filter by cluster.uuid • Introduced in: 9.7
cluster.name	string	query	False	Filter by cluster.name • Introduced in: 9.7
server_side_encryption	string	query	False	Filter by server_side_encryption • Introduced in: 9.7
cap_url	string	query	False	Filter by cap_url
azure_account	string	query	False	Filter by azure_account
snapmirror_use	string	query	False	Filter by snapmirror_use

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
port	integer	query	False	Filter by port
provider_type	string	query	False	Filter by provider_type
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
certificate_validation_enabled	boolean	query	False	Filter by certificate_validation_enabled
read_latency_warning_threshold	integer	query	False	Filter by read_latency_warning_threshold • Introduced in: 9.15
scope	string	query	False	Filter by scope • Introduced in: 9.12
name	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cloud_target]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_key": "string",
      "authentication_type": "string",
      "azure_account": "string",
      "cap_url":
"https://123.45.67.89:1234/CAP/api/v1/credentials?agency=myagency&missi
on=mymission&role=myrole",
      "cluster": {
        "name": "string",
        "uuid": "string"
      },
      "container": "bucket1",
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "string",
      "owner": "string",
      "provider_type": "string",
      "scope": "string",
      "server": "string",
      "server_side_encryption": "string",
      "snapmirror_use": "string",
```

```
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "url_style": "string",
      "used": 0,
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
name	string	The name of the cluster that owns the cloud target. For POST, this accepts the name of the peer cluster only if the cluster is in switchover state.
uuid	string	The UUID of the cluster that owns the cloud target. For POST, this accepts the UUID of the peer cluster only if the cluster is in switchover state.

ipspace

IPspace to use in order to reach the cloud target.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM

information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cloud_target

Name	Type	Description
_links	_links	
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.
azure_account	string	Azure account
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	

Name	Type	Description
container	string	Data bucket/container name. For FabricLink, a wildcard character "*" can also be specified to indicate that all the buckets in an SVM can use the same target information. However, for containers other than ONTAP, an exact name should be specified. • example: bucket1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
ipspace	ipspace	IPspace to use in order to reach the cloud target.
name	string	Cloud target name
owner	string	Owner of the target. Allowed values are FabricPool, SnapMirror or S3_SnapMirror. A target can be used by only one feature.
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
provider_type	string	Type of cloud provider. Allowed values depend on owner type. For FabricPool, AliCloud, AWS_S3, Azure_Cloud, GoogleCloud, IBM_COS, SGWS, and ONTAP_S3 are allowed. For SnapMirror, the valid values are AWS_S3 or SGWS. For FabricLink, AWS_S3, SGWS, S3_Compatible, S3EMU, LOOPBACK and ONTAP_S3 are allowed. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a cloud target

POST `/cloud/targets`

Introduced In: 9.6

Creates a cloud target.

Required properties

- `name` - Name for the cloud target.
- `owner` - Owner of the target: *fabricpool*, *snapmirror*.
- `provider_type` - Type of cloud provider: *AWS_S3*, *Azure_Cloud*, *SGWS*, *IBM_COS*, *AliCloud*, *GoogleCloud*, *ONTAP_S3*.
- `server` - Fully qualified domain name of the object store server. Required when `provider_type` is one of the following: *SGWS*, *IBM_COS*, *AliCloud*.
- `container` - Data bucket/container name.
- `access_key` - Access key ID if `provider_type` is not *Azure_Cloud* and `authentication_type` is *key*.
- `secret_password` - Secret access key if `provider_type` is not *Azure_Cloud* and `authentication_type` is *key*.

- `azure_account` - Azure account if `provider_type` is *Azure_Cloud*.
- `azure_private_key` - Azure access key if `provider_type` is *Azure_Cloud*.
- `cap_url` - Full URL of the request to a CAP server for retrieving temporary credentials if `authentication_type` is *cap*.
- `snapmirror_use` - Use of the cloud target if `owner` is *snapmirror*: data, metadata.
- `azure_msi_token` - Azure Managed Service Identity (MSI) token if `owner` is *fabricpool* or *snapmirror*, `provider_type` is *Azure_Cloud*, `authentication_type` if specified must be *azure_msi* and platform is Azure Netapp Files.

Recommended optional properties

- `authentication_type` - Authentication used to access the target: *key*, *cap*, *ec2_iam*, *gcp_sa*, *azure_msi*.
- `ssl_enabled` - SSL/HTTPS enabled or disabled.
- `port` - Port number of the object store that ONTAP uses when establishing a connection.
- `ipspace` - IPspace to use in order to reach the cloud target.
- `use_http_proxy` - Use the HTTP proxy when connecting to the object store server.
- `azure_sas_token` - Shared access signature to grant limited access to Azure storage account resources.
- `svm.name` or `svm.uuid` - Name or UUID of SVM if `owner` is *snapmirror*.
- `read_latency_warning_threshold` - Latency threshold to determine when to issue a warning alert EMS for a GET request.

Default property values

- `authentication_type`
- *ec2_iam* - if running in Cloud Volumes ONTAP in AWS
- *gcp_sa* - if running in Cloud Volumes ONTAP in GCP
- *azure_msi* - if running in Cloud Volumes ONTAP in Azure or if running on Azure NetApp Files platform with a Managed Service Identity (MSI) token.
- *key* - in all other cases.
- `server`
- *s3.amazonaws.com* - if `provider_type` is *AWS_S3*
- *blob.core.windows.net* - if `provider_type` is *Azure_Cloud*
- *storage.googleapis.com* - if `provider_type` is *GoogleCloud*
- `ssl_enabled` - *true*
- `port`
- *443* if `ssl_enabled` is *true*
- *80* if `ssl_enabled` is *false* and `provider_type` is not *SGWS*
- *8084* if `ssl_enabled` is *false* and `provider_type` is *SGWS*

- `ipspace` - *Default*
- `certificate_validation_enabled` - *true*
- `ignore_warnings` - *false*
- `check_only` - *false*
- `use_http_proxy` - *false*
- `server_side_encryption`
- *none* - if `provider_type` is *ONTAP_S3*
- *sse_s3* - if `provider_type` is not *ONTAP_S3*
- `url_style`
- *path_style* - if `provider_type` is neither *AWS_S3* nor *AliCloud*
- *virtual_hosted_style* - if `provider_type` is either *AWS_S3 or _AliCloud_*

Related ONTAP commands

- `storage aggregate object-store config create`

Parameters

Name	Type	In	Required	Description
ignore_warnings	boolean	query	False	Specifies whether or not warning codes should be ignored.
check_only	boolean	query	False	Do not create the target configuration, only check that the POST request succeeds.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.

Name	Type	Description
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.
azure_account	string	Azure account
azure_msi_token	string	Managed Service Identity (MSI) token required to authenticate to the Azure object store. This form of authentication is only supported on Azure NetApp Files.
azure_private_key	string	Azure access key
azure_sas_token	string	Shared access signature token to access Azure containers and blobs.
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	

Name	Type	Description
container	string	Data bucket/container name. For FabricLink, a wildcard character "*" can also be specified to indicate that all the buckets in an SVM can use the same target information. However, for containers other than ONTAP, an exact name should be specified. • example: bucket1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
ipspace	ipspace	IPspace to use in order to reach the cloud target.
name	string	Cloud target name
owner	string	Owner of the target. Allowed values are FabricPool, SnapMirror or S3_SnapMirror. A target can be used by only one feature.
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true
provider_type	string	Type of cloud provider. Allowed values depend on owner type. For FabricPool, AliCloud, AWS_S3, Azure_Cloud, GoogleCloud, IBM_COS, SGWS, and ONTAP_S3 are allowed. For SnapMirror, the valid values are AWS_S3 or SGWS. For FabricLink, AWS_S3, SGWS, S3_Compatible, S3EMU, LOOPBACK and ONTAP_S3 are allowed. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

Name	Type	Description
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
secret_password	string	Secret access key for AWS_S3 and other S3 compatible provider types.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

Example request

```
{
  "access_key": "string",
  "authentication_type": "string",
  "azure_account": "string",
  "azure_msi_token": "string",
  "azure_private_key": "string",
  "azure_sas_token": "string",
  "cap_url":
"https://123.45.67.89:1234/CAP/api/v1/credentials?agency=myagency&missi
on=mymission&role=myrole",
  "cluster": {
    "name": "string",
    "uuid": "string"
  },
  "container": "bucket1",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "string",
  "owner": "string",
  "provider_type": "string",
  "scope": "string",
  "secret_password": "string",
  "server": "string",
  "server_side_encryption": "string",
  "snapmirror_use": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "url_style": "string",
  "used": 0,
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
786436	VLDB is not running.
786908	Capability check failed.
787015	"encryption-key-id" is not expected when encrypt is false.
787016	An object store configuration with the same combination of server and container name already exists.

Error Code	Description
787020	Failed to check whether the FabricPool capability exists.
787021	The FabricPool capability is not enabled.
787030	Object store configuration creation is not supported in this cluster.
787036	Server name is invalid. A valid server name must be a fully qualified domain name.
787037	Cannot verify availability of the object store.
787038	Object store provider type requires a FabricPool license.
787039	Failed to retrieve FabricPool capacity license information.
787044	Cannot create object store configuration as the number of object stores in the cluster has reached maximum allowed limit.
787054	An object store configuration with the same combination of server, azure account and container name already exists.
787064	Object store server provider type does not match object store provider type. Use the provider type that matches the server.
787065	Certificate validation must be enabled for the object store provider.
787066	Certificate validation cannot be specified when the "-is-ssl-enabled" parameter is false.
787068	Disabling certificate validation requires an effective cluster version of ONTAP 9.4.0 or later.
787071	Object store configuration creation requires an effective cluster version of ONTAP 9.4.0 or later.
787082	Creating an object store configuration requires an effective cluster version of ONTAP 9.5.0 or later.
787089	The object store provider supports the virtual hosted-style, and the specified "-server" contains the container name. The container specified in the "-server" parameter must be the same as the name of the container specified in the "-container" parameter.
787133	Could not retrieve temporary credentials from the CAP server.
787134	Could not retrieve temporary credentials from the CAP server due to an unexpected response.
787136	Specifying "CAP" as the "-auth-type" requires an effective cluster version of ONTAP 9.5.0 or later.

Error Code	Description
787148	The clock on node is behind by more than the maximum of 5 minutes.
787149	The clock on node is ahead by more than the maximum of 5 minutes.
787158	An object store configuration with the same combination of server and container name already exists.
787159	An object store configuration with the same name already exists.
787179	One or more clusters in this MetroCluster configuration do not have an effective cluster version of ONTAP 9.7.0 or later.
787184	Using HTTP proxies with FabricPool requires an effective cluster version of ONTAP 9.7.0 or later.
787185	There is no HTTP proxy for IPspace. Refer to the "vserver http-proxy" man page for details.
787188	Object store configuration belongs to another cluster and cannot be modified from the local cluster, unless the cluster is in switchover mode.
787189	Object store configuration name must not have the "-mc" suffix when the configuration is created for a local cluster. To create an object store configuration which belongs to another cluster, the cluster must be in switchover mode and "-cluster" must be specified.
787209	Object store is not accessible from the partner cluster in a MetroCluster configuration.
787216	Cannot perform object store configuration operations on a cluster that is waiting for switchback.
787222	Object store connectivity check failed on partner cluster in MetroCluster configuration. Wait a few minutes, and try the operation again.
787223	Specifying "GCP_SA" as the "-auth-type" requires an effective cluster version of ONTAP 9.7.0 or later.
787227	Specifying "Azure_MSI" as the "-auth-type" requires an effective cluster version of ONTAP 9.7 or later.
787228	SSL is required for this configuration.
787229	Cannot perform operation as URL style is not supported with object store provider type.
787233	The hash key for enabling this FabricPool feature is not present on the cluster.
787234	The hash key provided for the node to enable this FabricPool feature is not valid.

Error Code	Description
787254	The parameter is not supported on this system.
787257	The parameter "-encryption-context" is only applicable for AWS object store provider.
787262	The "create-container" option is applicable only for an SGWS or ONTAP_S3 object store provider.
787301	ONTAP S3 Bucket is of type NAS and is not supported as a target for FabricPool.
787302	Cannot use HTTP port with "-is-ssl-enabled" set to true.
787303	Cannot use HTTPS port with "-is-ssl-enabled" set to false.
787325	FabricPool is not supported on this platform.
787350	Creating an object store configuration with a Managed Service Identity (MSI) token is only supported on Azure NetApp files.
787351	Internal Error. Invalid authentication type.
787352	Creating an object store configuration with a Managed Service Identity (MSI) token requires an effective cluster version of ONTAP 9.16.1 or later.
787353	Creating an object store configuration with a Managed Service Identity (MSI) token is not supported for this owner.
787354	The specified properties are mutually exclusive.
787355	*azure_msi* `authentication-type` is only supported with *Azure_Cloud* `provider-type`.
45940761	Hostname cannot be resolved. Check the spelling of the hostname and check the system DNS availability using the "vserver services name-service dns check" command.
45940778	Bucket already exists.
139591795	Object store configuration for S3 SnapMirror representing ONTAP S3 object store provider only supports \"*\" as the container name.
139591796	Object store configuration name for S3 SnapMirror representing ONTAP S3 object store provider must be of the format \"vserver:<destination_vserver_uuid>:<source_vserver_uuid>\\\".</source_vserver_uuid></destination_vserver_uuid>

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

Name	Type	Description
name	string	The name of the cluster that owns the cloud target. For POST, this accepts the name of the peer cluster only if the cluster is in switchover state.
uuid	string	The UUID of the cluster that owns the cloud target. For POST, this accepts the UUID of the peer cluster only if the cluster is in switchover state.

ipspace

IPspace to use in order to reach the cloud target.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cloud_target

Name	Type	Description
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.
azure_account	string	Azure account
azure_msi_token	string	Managed Service Identity (MSI) token required to authenticate to the Azure object store. This form of authentication is only supported on Azure NetApp Files.
azure_private_key	string	Azure access key
azure_sas_token	string	Shared access signature token to access Azure containers and blobs.
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	

Name	Type	Description
container	string	Data bucket/container name. For FabricLink, a wildcard character "*" can also be specified to indicate that all the buckets in an SVM can use the same target information. However, for containers other than ONTAP, an exact name should be specified. • example: bucket1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
ipspace	ipspace	IPspace to use in order to reach the cloud target.
name	string	Cloud target name
owner	string	Owner of the target. Allowed values are FabricPool, SnapMirror or S3_SnapMirror. A target can be used by only one feature.
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
provider_type	string	Type of cloud provider. Allowed values depend on owner type. For FabricPool, AliCloud, AWS_S3, Azure_Cloud, GoogleCloud, IBM_COS, SGWS, and ONTAP_S3 are allowed. For SnapMirror, the valid values are AWS_S3 or SGWS. For FabricLink, AWS_S3, SGWS, S3_Compatible, S3EMU, LOOPBACK and ONTAP_S3 are allowed. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
secret_password	string	Secret access key for AWS_S3 and other S3 compatible provider types.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a cloud target

DELETE `/cloud/targets/{uuid}`

Introduced In: 9.6

Deletes the cloud target specified by the UUID. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate object-store config delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cloud target UUID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
787013	Cannot delete object store configuration as the store is attached to one or more aggregates.
787014	Cannot delete object store configuration as there are objects in the store.
787078	Cannot delete object store configuration.
787188	Object store configuration belongs to another cluster and cannot be modified from the local cluster, unless the cluster is in switchover mode.
787216	Cannot perform object store configuration operations on a cluster that is waiting for switchback.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a cloud target

GET `/cloud/targets/{uuid}`

Introduced In: 9.6

Retrieves the cloud target specified by the UUID.

Related ONTAP commands

- `storage aggregate object-store config show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cloud target UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.
azure_account	string	Azure account
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.

Name	Type	Description
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	
container	string	Data bucket/container name. For FabricLink, a wildcard character "*" can also be specified to indicate that all the buckets in an SVM can use the same target information. However, for containers other than ONTAP, an exact name should be specified. • example: bucket1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
ipspace	ipspace	IPspace to use in order to reach the cloud target.
name	string	Cloud target name
owner	string	Owner of the target. Allowed values are FabricPool, SnapMirror or S3_SnapMirror. A target can be used by only one feature.
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
provider_type	string	Type of cloud provider. Allowed values depend on owner type. For FabricPool, AliCloud, AWS_S3, Azure_Cloud, GoogleCloud, IBM_COS, SGWS, and ONTAP_S3 are allowed. For SnapMirror, the valid values are AWS_S3 or SGWS. For FabricLink, AWS_S3, SGWS, S3_Compatible, S3EMU, LOOPBACK and ONTAP_S3 are allowed. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_key": "string",
  "authentication_type": "string",
  "azure_account": "string",
  "cap_url":
"https://123.45.67.89:1234/CAP/api/v1/credentials?agency=myagency&missi
on=mymission&role=myrole",
  "cluster": {
    "name": "string",
    "uuid": "string"
  },
  "container": "bucket1",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "string",
  "owner": "string",
  "provider_type": "string",
  "scope": "string",
  "server": "string",
  "server_side_encryption": "string",
  "snapmirror_use": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "url_style": "string",
  "used": 0,
```

```
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
name	string	The name of the cluster that owns the cloud target. For POST, this accepts the name of the peer cluster only if the cluster is in switchover state.
uuid	string	The UUID of the cluster that owns the cloud target. For POST, this accepts the UUID of the peer cluster only if the cluster is in switchover state.

ipspace

IPspace to use in order to reach the cloud target.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a cloud target

PATCH `/cloud/targets/{uuid}`

Introduced In: 9.6

Updates the cloud target specified by the UUID with the fields in the body. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate object-store config modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cloud target UUID
ignore_warnings	boolean	query	False	Specifies whether or not warnings should be ignored.
check_only	boolean	query	False	Do not modify the configuration, only check that the PATCH request succeeds.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.
azure_account	string	Azure account
azure_msi_token	string	Managed Service Identity (MSI) token required to authenticate to the Azure object store. This form of authentication is only supported on Azure NetApp Files.
azure_private_key	string	Azure access key
azure_sas_token	string	Shared access signature token to access Azure containers and blobs.
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	
name	string	Cloud target name
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
secret_password	string	Secret access key for AWS_S3 and other S3 compatible provider types.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

Example request

```
{
  "access_key": "string",
  "authentication_type": "string",
  "azure_account": "string",
  "azure_msi_token": "string",
  "azure_private_key": "string",
  "azure_sas_token": "string",
  "cap_url":
"https://123.45.67.89:1234/CAP/api/v1/credentials?agency=myagency&missi
on=mymission&role=myrole",
  "name": "string",
  "scope": "string",
  "secret_password": "string",
  "server": "string",
  "server_side_encryption": "string",
  "snapmirror_use": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "url_style": "string",
  "used": 0,
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
786436	VLDB is not running.
786908	Capability check failed.
787016	An object store configuration with the same combination of server and container name already exists.
787036	Server name is invalid. A valid server name must be a fully qualified domain name.
787038	Object store provider type requires a FabricPool license.
787039	Failed to retrieve FabricPool capacity license information.
787054	An object store configuration with the same combination of server, azure account and container name already exists.
787064	Object store server provider type does not match object store provider type. Use the provider type that matches the server.
787065	Certificate validation must be enabled for the object store provider.
787066	Certificate validation cannot be specified when the "-is-ssl-enabled" parameter is false.

Error Code	Description
787068	Disabling certificate validation requires an effective cluster version of ONTAP 9.4.0 or later.
787089	The object store provider supports the virtual hosted-style, and the specified "-server" contains the container name. The container specified in the "-server" parameter must be the same as the name of the container specified in the "-container" parameter.
787133	Could not retrieve temporary credentials from the CAP server.
787134	Could not retrieve temporary credentials from the CAP server due to an unexpected response.
787136	Specifying "CAP" as the "-auth-type" requires an effective cluster version of ONTAP 9.5.0 or later.
787148	The clock on the node is behind by more than the maximum of 5 minutes.
787149	The clock on the node is ahead by more than the maximum of 5 minutes.
787184	Using HTTP proxies with FabricPool requires an effective cluster version of ONTAP 9.7.0 or later.
787185	There is no HTTP proxy for IPspace. Refer to the "vserver http-proxy" man page for details.
787188	Object store configuration belongs to cluster and cannot be modified from the local cluster, unless the cluster is in switchover mode.
787209	Object store is not accessible from the partner cluster in a MetroCluster configuration.
787216	Cannot perform object store configuration operations on a cluster that is waiting for switchback.
787223	Specifying "GCP_SA" as the "-auth-type" requires an effective cluster version of ONTAP 9.7.0 or later.
787227	Specifying "Azure_MSI" as the "-auth-type" requires an effective cluster version of ONTAP 9.7 or later.
787228	SSL is required for this configuration.
787229	Cannot perform operation as URL style is not supported with object store provider type.
787233	The hash key for enabling this FabricPool feature is not present on the cluster.
787234	The hash key provided for the node to enable this FabricPool feature is not valid.
787254	The parameter is not supported on this system.

Error Code	Description
787257	The parameter "-encryption-context" is only applicable for AWS object store provider.
787301	ONTAP S3 Bucket is of type NAS and is not supported as a target for FabricPool.
787302	Cannot use HTTP port with "-is-ssl-enabled" set to true.
787303	Cannot use HTTPS port with "-is-ssl-enabled" set to false.
787306	Object store is not accessible from the partner cluster in a MetroCluster configuration.
787325	FabricPool is not supported on this platform.
787350	Modifying an object store configuration with a Managed Service Identity (MSI) token is only supported on Azure NetApp Files.
787351	Internal Error. Invalid authentication type.
787352	Modifying an object store configuration with a Managed Service Identity (MSI) token requires an effective cluster version of ONTAP 9.16.1 or later.
787353	Modifying an object store configuration with a Managed Service Identity (MSI) token is not supported for this owner.
787354	The specified properties are mutually exclusive.
787355	*azure_msi* `authentication-type` is only supported with *Azure_Cloud* `provider-type`.
45940761	Hostname cannot be resolved. Check the spelling of the hostname and check the system DNS availability using the "vserver services name-service dns check" command.
45940778	Bucket already exists.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

ipspace

IPspace to use in order to reach the cloud target.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cloud_target

Name	Type	Description
access_key	string	Access key ID for AWS_S3 and other S3 compatible provider types.
authentication_type	string	Authentication used to access the target. SnapMirror does not yet support CAP. Required in POST.

Name	Type	Description
azure_account	string	Azure account
azure_msi_token	string	Managed Service Identity (MSI) token required to authenticate to the Azure object store. This form of authentication is only supported on Azure NetApp Files.
azure_private_key	string	Azure access key
azure_sas_token	string	Shared access signature token to access Azure containers and blobs.
cap_url	string	This parameter is available only when auth-type is CAP. It specifies a full URL of the request to a CAP server for retrieving temporary credentials (access-key, secret-password, and session token) for accessing the object store.
certificate_validation_enabled	boolean	Is SSL/TLS certificate validation enabled? The default value is true. This can only be modified for SGWS, IBM_COS, and ONTAP_S3 provider types. • Introduced in: 9.6 • x-nullable: true
cluster	cluster	
name	string	Cloud target name
port	integer	Port number of the object store that ONTAP uses when establishing a connection. Required in POST. • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
read_latency_warning_threshold	integer	The warning threshold for read latency that is used to determine when an alert ems for a read operation from an object store should be issued.
scope	string	If the cloud target is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
secret_password	string	Secret access key for AWS_S3 and other S3 compatible provider types.
server	string	Fully qualified domain name of the object store server. Required on POST. For Amazon S3, server name must be an AWS regional endpoint in the format s3.amazonaws.com or s3-<region>.amazonaws.com, for example, s3-us-west-2.amazonaws.com. The region of the server and the bucket must match. For Azure, if the server is a "blob.core.windows.net" or a "blob.core.usgovcloudapi.net", then a value of azure-account followed by a period is added in front of the server.</region>

Name	Type	Description
server_side_encryption	string	Encryption of data at rest by the object store server for AWS_S3 and other S3 compatible provider types. In most cases it is best not to change default value of "sse_s3" for object store servers which support SSE-S3 encryption. The encryption is in addition to any encryption done by ONTAP at a volume or at an aggregate level. Note that changing this option does not change encryption of data which already exist in the object store. • enum: ["none", "sse_s3", "sse_kms", "dsse_kms"] • Introduced in: 9.7 • x-nullable: true
snapmirror_use	string	Use of the cloud target by SnapMirror.
ssl_enabled	boolean	SSL/HTTPS enabled or not
svm	svm	This field is only applicable when used for SnapMirror and FabricLink. For POST and PATCH, SVM information is required for SnapMirror and FabricLink targets when the scope is svm and is not allowed for FabricPool targets. For GET, this field is not set if the scope of the cloud target is "cluster".
url_style	string	URL style used to access S3 bucket.
use_http_proxy	boolean	Use HTTP proxy when connecting to the object store.
used	integer	The amount of cloud space used by all the aggregates attached to the target, in bytes. This field is only populated for FabricPool targets. The value is recalculated once every 5 minutes.

Name	Type	Description
uuid	string	Cloud target UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Cluster

Cluster overview

Overview

These APIs enable you to perform a number of independent workflows, including:

- Creating the cluster
- Adding nodes to the cluster
- Managing cluster configuration data (including name, version, NTP servers, name servers, and DNS domains)
- Managing node configuration data (including node names, models, serial numbers, and HA group

information)

- Discovering the nodes on the cluster network that can be added to the cluster
- Viewing and updating current and recent jobs
- Updating the cluster software

Pre-Cluster APIs

A few of the cluster APIs (namely, POST/OPTIONS on /api/cluster, GET/HEAD/OPTIONS on /api/cluster/nodes, and calls on /api/cluster/jobs) are allowed before the cluster is created. These APIs support creation of the cluster and monitoring of its progress. Any other cluster API used before the cluster is created will fail.

Manage clusters

Cluster endpoint overview

Overview

You can use this API to create a cluster, update cluster-wide configurations, and retrieve the current configuration details.

Creating a cluster

You can create a new cluster by issuing a POST request to /cluster. Parameters are provided in the body of the POST request to configure cluster-wide settings and add nodes during the cluster setup.

Fields used for creating a cluster

The fields used for the cluster APIs fall into the following categories:

- Required cluster-wide configuration
- Optional cluster-wide configuration

Required cluster-wide configuration

The following fields are always required for any POST /cluster request:

- name
- password

Optional cluster-wide configuration

The following fields are used to set up additional cluster-wide configurations:

- location
- contact
- dns_domains
- name_servers
- ntp_servers
- timezone

- license
- configuration_backup
- management_interface
- nodes
- active_directory

Nodes field

The nodes field specifies the nodes to join to the cluster. To use this API, all nodes must run the same version of ONTAP. If you do not specify a node, the cluster is configured with one node added. The REST request is issued to the node that is added to the cluster. If you specify one node, do not use the "node.cluster_interface.ip.address" field. If you specify multiple nodes, specify the node to which the REST request is issued in addition to the remote nodes. Use the "node.cluster_interface.ip.address" field to identify each node. All other node fields are optional in all cases. If you provide a field for one node, you need to provide the same field for all nodes.

Node networking fields

The cluster management interface and each node management interface use the cluster management interface subnet mask and gateway. For advanced configurations in which the cluster and node management interfaces are on different subnets, use the /network/ip/interface APIs to configure network interfaces after setup is complete.
The management interfaces are used to communicate with the name servers and NTP servers. The address family of the name servers and NTP servers must match the management interfaces address family.

Single node cluster field

When the "single_node_cluster" field is set to "true", the cluster is created in single node cluster mode. You can provide a node field for this node for node-specific configuration but do not use the "node.cluster_interface.ip.address" field. Storage failover is configured to non-HA mode, and ports used for cluster ports are moved to the default IPspace. This might cause the node to reboot during setup. While a node reboots, the RESTful interface might not be available. See "Connection failures during cluster create" for more information.

Create recommended aggregates parameter

When the "create_recommended_aggregates" parameter is set to "true", aggregates based on an optimal layout recommended by the system are created on each of the nodes in the cluster. The default setting is "false".

Performance monitoring

Performance of the cluster can be monitored by the `metric.*` and `statistics.*` fields. These fields show the performance of the cluster in terms of IOPS, latency and throughput. The `metric.*` fields denote an average, whereas the `statistics.*` fields denote a real-time monotonically increasing value aggregated across all nodes.

Analytics auto-enable properties

New SVMs will use the values set for the "auto_enable_analytics" and "auto_enable_activity_tracking" fields as the default for new volumes. The default setting is false.

Setting auto_enable_analytics

```
# The API:
/api/cluster/

# The Call:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{
"auto_enable_analytics" : "true"}'

# The response:
{
"job": {
  "uuid": "a079cfd8-50d0-11ed-9a7f-005056acd56e",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/a079cfd8-50d0-11ed-9a7f-005056acd56e"
    }
  }
}
}
```

Setting auto_enable_activity_tracking

```
# The API:
/api/cluster/

# Modify  field:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{
"auto_enable_activity_tracking" : "true"}'

# The response:
{
"job": {
  "uuid": "8a8b29e6-557a-11ed-92cc-005056ac76ec",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8a8b29e6-557a-11ed-92cc-005056ac76ec"
    }
  }
}
}
```

Monitoring cluster create status

Errors before the job starts

Configuration in the POST /cluster request is validated before the cluster create job starts. If an invalid configuration is found, an HTTP error code in the 4xx range is returned. No cluster create job is started.

Polling on the job

After a successful POST /cluster request is issued, an HTTP error code of 202 is returned along with a job UUID and link in the body of the response. The cluster create job continues asynchronously and is monitored with the job UUID using the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Errors during the job

If a failure occurs during the cluster create job, the job body provides details of the error along with error code fields. See the error table under "Responses" in the POST /cluster documentation for common error codes and descriptions.

Rerunning POST /cluster

The POST /cluster request can be rerun if errors occur. When rerunning the request, use the same body and query parameters. You can change the value of any field in the original body or query, but you cannot change the provided fields. For example, an initial request might have a body section as follows:
+

```
body =
{
"name": "clusCreateRerun",
"password": "openSesame",
"nodes": [
  {
    "cluster_interface": {
      "ip": {
        "address": "1.1.1.1"
      }
    }
  },
  {
    "cluster_interface": {
      "ip": {
        "address": "2.2.2.2"
      }
    }
  }
]
}
```

A rerun request updates the body details to:
+

```
body =
{
"name": "clusCreateRerun",
"password": "openSesame",
"nodes": [
  {
    "cluster_interface": {
      "ip": {
        "address": "3.3.3.3"
      }
    }
  },
  {
    "cluster_interface": {
      "ip": {
        "address": "4.4.4.4"
      }
    }
  }
]
}
```

A rerun request with the following body details is invalid:
+

```
body =
{
"name": "clusCreateRerun",
"password": "openSesame",
"nodes": [
  {
    "cluster_interface": {
      "ip": {
        "address": "3.3.3.3"
      }
    }
  }
]
}
```

Note that the password might already be configured. If a password is already configured and then a new password is provided, the new request overwrites the existing password. If a password is already configured either by another interface or by a previous POST request to /cluster, authenticate any future REST requests with that password. If a POST request to /cluster with the default return_timeout of 0 returns an error, then the password was not changed.

Connection failures during cluster create

A request to poll the job status might fail during a cluster create job in the following two cases. In these cases, programmatic use of the RESTful interface might be resilient to these connection failures.

1. When the "single_node_cluster" flag is set to "true", the node might reboot. During this time, the RESTful interface might refuse connections and return errors on a GET request, or connection timeouts might occur. Programmatic use of the RESTful interface during reboots must consider these effects while polling a cluster create job.
2. The "mgmt_auto" LIF is removed during the cluster create job. A POST /cluster request might be issued on the "mgmt_auto" LIF. However, requests to poll the job status might fail during cluster create when the "mgmt_auto" LIF is removed. The "mgmt_auto" LIF is only removed if a cluster management interface is provided as an argument to POST /cluster, and only after the cluster management interface is created. Programmatic use of the POST /cluster API on the "mgmt_auto" LIF should be configured to dynamically switch to polling the job on the cluster management LIF.

Active Directory account for the cluster

An Active Directory account for the cluster can be retrieved, created, modified, and deleted by using the `active_directory.*` fields. An account can be created either during cluster creation using a POST request or after cluster creation using a PATCH request.
An Active Directory account can be deleted by passing `null` as the Active Directory name during a PATCH request. The `username` and `password` fields are required to create, modify, and delete an Active Directory account.
Creating a new Active Directory account for the cluster:

```
# The API:
/api/cluster/

# Modify  field:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{ "active_directory":
{"username": "administrator", "password": "password", "name": "adaccount",
"fqdn": "test.com", "force_account_overwrite" : true, "security":
{"advertised_kdc_encryptions": ["des"]}}}'

# The response:
{
"job": {
  "uuid": "8a8b29e6-557a-11ed-92cc-005056ac76ec",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8a8b29e6-557a-11ed-92cc-005056ac76ec"
    }
  }
}
}
```

Deleting the Active Directory account of the cluster:

```
# The API:
/api/cluster/

# Modify  field:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{ "active_directory":
{"username": "administrator","password": "password","name": null}}'

# The response:
{
"job": {
  "uuid": "8a8b29e6-557a-11ed-92cc-005056ac76ec",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8a8b29e6-557a-11ed-92cc-005056ac76ec"
    }
  }
}
}
```

Modifying cluster configurations

The following fields can be used to modify a cluster-wide configuration:

- name
- location
- contact
- dns_domains
- name_servers
- timezone
- auto-enable-analytics
- auto-enable-activity-tracking
- active_directory

Examples

Minimally configuring a 2-node setup

```
# Body
minimal_2_node_cluster.txt(body):
{
"name": "clusCreateExample1",
"password": "openSesame",
"nodes": [
  {
    "cluster_interface": {
      "ip": {
        "address": "1.1.1.1"
      }
    }
  },
  {
    "cluster_interface": {
      "ip": {
        "address": "2.2.2.2"
      }
    }
  }
]
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster" -d
"@minimal_2_node_cluster.txt"
```

Setting up a single node with additional node configuration and auto aggregate creation

```
# Body
single_node_additional_config.txt(body):
{
"name": "clusCreateExample2",
"password": "openSesame",
"nodes": [
  {
    "name": "singleNode",
    "location": "Sunnyvale"
  }
]
}

# Request
curl -X POST "https://<mgmt-
ip>/api/cluster?single_node_cluster=true&create_recommended_aggregates=tru
e" -d "@single_node_additional_config.txt"
```

Modifying a cluster-wide configuration

```
# Body
modify_cluster_config.txt(body):
{
"contact": "it@company.com"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d
"@modify_cluster_config.txt"
```

Creating a cluster using the cluster "create" operation

This example shows how to create a cluster using the cluster APIs. Specifically, this example shows the creation of a two-node cluster and uses information from the nodes themselves combined with user supplied information to configure the cluster.

Preparing for setup

Before the REST APIs can be issued to create the cluster, the cluster must be wired up and powered on. The network connections between the nodes for the cluster interconnect and the connections to the management network must be completed. After the nodes are powered on, the nodes automatically configure interfaces on the platform’s default cluster ports to allow the nodes to discover each other during setup and expansion workflows. You must configure a management interface on one node or use the mgmt_auto LIF, which is

assigned an IP address using DHCP, to start using the REST APIs. By making a console connection to a node, the cluster setup wizard guides you through the configuration of the initial node management interface to which the REST calls can be sent. Once this step is completed, exit the wizard by typing "exit". You can then issue REST API requests.

1. Wire and power on the nodes.
2. Make a console connection to one node to access the cluster setup wizard.
3. Enter node management interface information to enable REST API requests to be sent to the node.

```
Welcome to the cluster setup wizard.
You can enter the following commands at any time:
"help" or "?" - if you want to have a question clarified,
"back" - if you want to change previously answered questions, and
"exit" or "quit" - if you want to quit the cluster setup wizard.
Any changes you made before quitting will be saved.
You can return to cluster setup at any time by typing "cluster setup".
To accept a default or omit a question, do not enter a value.
This system will send event messages and periodic reports to NetApp
Technical
Support. To disable this feature, enter
autosupport modify -support disable
within 24 hours.
Enabling AutoSupport can significantly speed problem determination and
resolution should a problem occur on your system.
For further information on AutoSupport, see:
  http://support.netapp.com/autosupport/
  Type yes to confirm and continue {yes}: yes
  Enter the node management interface port [e0c]:
    Enter the node management interface IP address: 10.224.82.249
    Enter the node management interface netmask: 255.255.192.0
    Enter the node management interface default gateway: 10.224.64.1
    A node management interface on port e0c with IP address 10.224.82.249
has been created.
    Use your web browser to complete cluster setup by accessing
    https://10.224.82.249
    Otherwise, press Enter to complete cluster setup using the command
line
    interface: exit
    Exiting the cluster setup wizard. Any changes you made have been
saved.
    The cluster administrator's account (username "admin") password is set
to the system default.
    Warning: You have exited the cluster setup wizard before completing
all
    of the tasks. The cluster is not configured. You can complete cluster
setup by typing
    "cluster setup" in the command line interface.
```

Discovering the nodes

If you issue a GET /api/cluster/nodes request when the nodes are not in a cluster, the API returns a list of nodes that were discovered on the cluster interconnect. Information returned includes the node's serial number, model, software version, UUID, and cluster interface address. The number of nodes returned should

be the same as the number of nodes expected to be in the cluster. If too many nodes are discovered, remove the nodes that should not be part of the cluster. If not enough nodes are discovered, verify all the nodes are powered on, that the connections to the cluster interconnect are complete, and retry the command.
+

```
# The API:
/api/cluster/nodes

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=state,uptime" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "6dce4710-c860-11e9-b5bc-005056bb6135",
    "name": "cluster1",
    "uptime": 134555,
    "state": "up",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/6dce4710-c860-11e9-b5bc-005056bb6135"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state,uptime"
  }
}
}
```

Creating the cluster

When the node information is available, including each node's cluster interface address, you can assemble the information for creating the cluster. Provide the cluster name and the password for the admin account. The rest of the information is optional and can be configured later using other APIs. Provide the cluster interface address for each node to be included in the cluster so that you can connect to it while adding it to the cluster. In addition to the cluster interface address, you can provide the optional node name, location, and management interface information. If you do not provide node names, nodes are named based on the cluster name. The nodes' management interface subnet mask and gateway values are omitted and must be the same as the cluster management interface's subnet mask and gateway.
+

```
# The API:
/api/cluster

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster" -H "accept:
application/hal+json" -H "accept: application/hal+json" -d
'{"name":"cluster1","location":"datacenter1","contact":"me","dns_domains":
["example.com"],"name_servers":["10.224.223.130","10.224.223.131","10.224.
223.132"],"ntp_servers":["time.nist.gov"],"active_directory": {"username":
"administrator","password": "password","name": "adaccount","fqdn":
"test.com","force_account_overwrite" : true},
"management_interface":{"ip":{"address":"10.224.82.25","netmask":"255.255.
192.0","gateway":"10.224.64.1"}},"password":"mypassword","license":{"keys"
:["AMEPOSOIKLKGEEEEDGNDEKSJDEEE"]},"nodes":[{"cluster_interface":{"ip":{"a
ddress":"169.254.245.113"}},"name":"node1","management_interface":{"ip":{"
address":"10.224.82.29"}}},{"cluster_interface":{"ip":{"address":"169.254.
217.95"}},"name":"node2","management_interface":{"ip":{"address":"10.224.8
2.31"}}}]}'

# The response:
{
"job": {
  "uuid": "b5bc07e2-19e9-11e9-a751-005056bbd95f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f"
    }
  }
}
}
```

Monitoring the progress of cluster creation

To monitor the progress of the cluster create operation, poll the returned job link until the state value is no longer "running" or "queued".
+

```
# The API:
/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/b5bc07e2-1e9-11e9-a751-
005056bbd95f" -H "accept: application/hal+json"

# The response:
{
"uuid": "b5bc07e2-19e9-11e9-a751-005056bbd95f",
"description": "POST /api/cluster",
"state": "success",
"message": "success",
"code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f"
  }
}
}
```

Verifying the cluster information

After the cluster is created, you can verify the information applied using a number of APIs. You can retrieve most of the information provided using the /api/cluster and /api/cluster/nodes APIs. In addition, you can view the network interface and route information using the /api/network APIs. The following example shows how to retrieve the cluster information:
+

```
# The API:
/api/cluster

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster" -H "accept:
application/hal+json"

# The response:
{
"name": "C1_sti44-vsim-ucs515w_1621957038",
"uuid": "5f7f57c7-bd67-11eb-95f4-005056a7b9b1",
"location": "sti",
"contact": "example_name",
"version": {
  "full": "NetApp Release 9.10.1: Mon May 24 08:07:35 UTC 2021",
```

```
  "generation": 9,
  "major": 10,
  "minor": 1
},
"dns_domains": [
  "example.com"
],
"name_servers": [
  "192.0.2.1",
  "192.0.2.2"
],
"ntp_servers": [
  "192.0.2.3"
],
"peering_policy": {
  "minimum_passphrase_length": 8,
  "authentication_required": true,
  "encryption_required": false
},
"management_interfaces": [
  {
    "uuid": "beef2db7-bd67-11eb-95f4-005056a7b9b1",
    "name": "clus_mgmt",
    "ip": {
      "address": "192.0.2.4"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/beef2db7-bd67-11eb-95f4-
005056a7b9b1"
      }
    }
  },
  {
    "uuid": "cb63e02c-bd72-11eb-95f4-005056a7b9b1",
    "name": "sti44-vsim-ucs515w_cluster_mgmt_inet6",
    "ip": {
      "address": "2001:db8:ef56:gh78::ij90"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/cb63e02c-bd72-11eb-95f4-
005056a7b9b1"
      }
    }
  },
```

```
    {
      "uuid": "ea13dec1-bd72-11eb-bd00-005056a7f50e",
      "name": "sti44-vsim-ucs515x_cluster_mgmt_inet6",
      "ip": {
        "address": "2001:db8:ef56:gh78::ij91"
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/interfaces/ea13dec1-bd72-11eb-bd00-
005056a7f50e"
        }
      }
    }
  ],
  "metric": {
    "timestamp": "2021-05-26T20:36:15Z",
    "duration": "PT15S",
    "status": "ok",
    "latency": {
      "other": 0,
      "total": 0,
      "read": 0,
      "write": 0
    },
    "iops": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "throughput": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
  },
  "statistics": {
    "timestamp": "2021-05-26T20:36:25Z",
    "status": "ok",
    "latency_raw": {
      "other": 0,
      "total": 0,
      "read": 0,
      "write": 0
    },
```

```
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  }
},
"timezone": {
  "name": "America/New_York"
},
"san_optimized": false,
"active_directory": {
  "name": "ADACCOUNT",
  "fqdn": "TEST.COM",
  "organizational_unit": "CN=Computers"
},
"_links": {
  "self": {
    "href": "/api/cluster"
  }
}
}

# The API:
/api/cluster

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster?fields=management_interfaces"
-H "accept: application/hal+json"

# The response:
{
"management_interfaces": [
  {
    "uuid": "c661725a-19e9-11e9-a751-005056bbd95f",
    "name": "cluster_mgmt",
    "ip": {
      "address": "192.0.2.1"
    },
    "_links": {
```

```
      "self": {
        "href": "/api/network/ip/interfaces/c661725a-19e9-11e9-a751-
005056bbd95f"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster"
  }
}
}
```


Retrieve the cluster configuration

GET `/cluster`

Introduced In: 9.6

Retrieves the cluster configuration.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response


```
Status: 200, Ok
```


Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
active_directory	active_directory	
auto_enable_activity_tracking	boolean	Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes.

Name	Type	Description
auto_enable_analytics	boolean	Indicates how new SVMs will default "auto_enable_analytics" for new volumes.
certificate	certificate	Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.
contact	string	
disaggregated	boolean	Specifies whether the cluster is designed for disaggregated storage.
dns_domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
metric	metric	Performance numbers, such as IOPS latency and throughput.
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
peering_policy	peering_policy	
san_optimized	boolean	Specifies if this cluster is an All SAN Array.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
timezone	timezone	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7
uuid	string	

Name	Type	Description
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "active_directory": {
    "force_account_overwrite": "",
    "fqdn": "server1.com",
    "name": "account1",
    "organizational_unit": "CN=Test",
    "security": {
      "advertised_kdc_encryptions": [
        "string"
      ]
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "location": "building 1",
  "management_interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
```

```
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "cluster1",
  "name_servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "ntp_servers": [
    "time.nist.gov",
    "10.98.19.20",
    "2610:20:6F15:15::27"
  ],
  "peering_policy": {
    "minimum_passphrase_length": 0
  },
  "statistics": {
```

```
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "timezone": {
    "name": "America/New_York"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9241607	Only POST/OPTIONS on /api/cluster, GET/HEAD/OPTIONS on /api/cluster/nodes, or calls on /api/cluster/jobs are available in precluster.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

active_directory

Name	Type	Description
fqdn	string	Fully qualified domain name.
name	string	Active Directory account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account is created.
security	active_directory_security	

certificate

Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

Name	Type	Description
ip	ip	Object to setup an interface along with its default router.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

management_interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

cluster_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.

Name	Type	Description
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	

Name	Type	Description
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.

Name	Type	Description
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code

Name	Type	Description
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number

Name	Type	Description
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.

Name	Type	Description
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	local	
partner	partner	

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

management_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".

Name	Type	Description
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP. • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true
backup	backup	Provides the properties of the service processor backup partition.
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true".

Name	Type	Description
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
ipv6_interface	ipv6_interface	Object to setup an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.

Name	Type	Description
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

nodes

Complete node information

Name	Type	Description
_links	_links	
anti_ransomware_version	string	Anti ransomware version.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information

Name	Type	Description
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
hw_assist	hw_assist	The hardware assist information.
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
statistics	statistics	Raw CPU performance for the nodes.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*

Name	Type	Description
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

peering_policy

Name	Type	Description
authentication_required	boolean	Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers.
encryption_required	boolean	Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers.
minimum_passphrase_length	integer	Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information.
  Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols
  such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

Name	Type	Description
name	string	The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone. The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0. **IANA time zone format** The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years. "Location" represents a compound name using additional forward slashes. An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis". **ONTAP traditional time zone** Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone. • example: America/New_York • Introduced in: 9.7 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the cluster configuration

PATCH `/cluster`

Introduced In: 9.6

Updates the cluster configuration after the cluster is created.

Related ONTAP commands

- `cluster identity modify`
- `system node modify`
- `vserver services dns modify`
- `vserver services name-service dns modify`
- `timezone`
- `security ssl modify`
- `vserver active-directory create`
- `vserver active-directory modify`
- `vserver active-directory delete`
- `vserver cifs security modify`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
active_directory	active_directory	
auto_enable_activity_tracking	boolean	Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes.

Name	Type	Description
auto_enable_analytics	boolean	Indicates how new SVMs will default "auto_enable_analytics" for new volumes.
certificate	certificate	Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.
contact	string	
disaggregated	boolean	Specifies whether the cluster is designed for disaggregated storage.
dns_domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
peering_policy	peering_policy	
san_optimized	boolean	Specifies if this cluster is an All SAN Array.
timezone	timezone	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7
uuid	string	

Example request

```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "active_directory": {
    "force_account_overwrite": "",
    "fqdn": "server1.com",
    "name": "account1",
    "organizational_unit": "CN=Test",
    "password": "testpwd",
    "security": {
      "advertised_kdc_encryptions": [
        "string"
      ]
    },
    "username": "admin"
  },
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "location": "building 1",
  "management_interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "name": "cluster1",
  "name_servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "peering_policy": {
    "minimum_passphrase_length": 0
  },
  "timezone": {
```

```
    "name": "America/New_York"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655414	Failed to the remove Active Directory machine.
655431	Username cannot be empty.
655432	Password cannot be empty.
655562	The NetBIOS name cannot be longer than 15 characters.
655563	NetBIOS name contains characters that are not allowed.

Error Code	Description
655914	Failed to create the Active Directory machine account.
655915	A CIFS server for this SVM already exists. Having both a CIFS server and an Active Directory account for the same SVM is not supported. Use the \"vserver cifs delete\" command to delete the existing CIFS server and try the command again.
656464	Failed to create the Active Directory machine account. Reason: Invalid Credentials.
656465	Failed to create the Active Directory machine account. Reason: An account with this name already exists.
656466	Failed to create the Active Directory machine account. Reason: Unable to connect to any domain controllers.
656467	Failed to create the Active Directory machine account. Reason: Organizational-Unit not found.
656478	Failed to create the Active Directory machine account. Reason: KDC has no support for encryption type.
656483	Active Directory account creation for the admin SVM requires an effective cluster version of 9.16.0 or later.
3604491	Updating timezone failed.
3604520	Internal error. System state is not correct to read or change timezone.
8847361	Too many DNS domains provided.
8847362	Too many name servers provided.
8847400	The "dns_domains" field is required when "name_servers" is specified.
9240587	A name must be provided.
9240588	The name is too long.
12451843	Certificate does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

active_directory

Name	Type	Description
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it is overwritten and reused.
fqdn	string	Fully qualified domain name.
name	string	Active Directory account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account is created.
password	string	Administrator password required for Active Directory account creation, modification, and deletion.
security	active_directory_security	
username	string	Administrator username required for Active Directory account creation, modification, and deletion.

certificate

Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

Name	Type	Description
ip	ip	Object to setup an interface along with its default router.

ip

IP information

management_interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

cluster_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.

Name	Type	Description
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.

Name	Type	Description
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.

Name	Type	Description
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.

Name	Type	Description
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

management_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".

Name	Type	Description
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP. • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true
backup	backup	Provides the properties of the service processor backup partition.
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true".

Name	Type	Description
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
ipv6_interface	ipv6_interface	Object to setup an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.

Name	Type	Description
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
name	string	

Name	Type	Description
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

nodes

Complete node information

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information

Name	Type	Description
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	

Name	Type	Description
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

peering_policy

Name	Type	Description
authentication_required	boolean	Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers.
encryption_required	boolean	Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers.
minimum_passphrase_length	integer	Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information.
  Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols
  such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

Name	Type	Description
name	string	The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone. The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0. **IANA time zone format** The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years. "Location" represents a compound name using additional forward slashes. An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis". **ONTAP traditional time zone** Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone. • example: America/New_York • Introduced in: 9.7 • x-nullable: true

cluster

Complete cluster information

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
active_directory	active_directory	
auto_enable_activity_tracking	boolean	Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes.
auto_enable_analytics	boolean	Indicates how new SVMs will default "auto_enable_analytics" for new volumes.
certificate	certificate	Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.
contact	string	
disaggregated	boolean	Specifies whether the cluster is designed for disaggregated storage.

Name	Type	Description
dns_domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
location	string	
management_interfaces	array[management_interfaces]	
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
peering_policy	peering_policy	
san_optimized	boolean	Specifies if this cluster is an All SAN Array.

Name	Type	Description
timezone	timezone	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a cluster

POST `/cluster`

Introduced In: 9.6

Creates a cluster.

Required properties

- `name`
- `password`

Recommended optional properties

- `location`
- `contact`
- `dns_domains`
- `name_servers`
- `ntp_servers`
- `license`
- `configuration_backup`
- `management_interface`
- `nodes`
- `timezone`

Learn more

- DOC /cluster

Parameters

Name	Type	In	Required	Description
single_node_cluster	boolean	query	False	Configures a single node cluster. All cluster ports are reassigned to the default network. The storage failover settings are configured to non-HA. The node reboots during this operation.
create_recommended_aggregates	boolean	query	False	Create aggregates based on an optimal layout recommended by the system. • Introduced in: 9.7 • Default value:

Name	Type	In	Required	Description
keep_precluster_config	boolean	query	False	This is used to keep temporary configuration settings that allow initial setup including a node scoped certificate and possibly an automatically created node management interface. This is useful when creating a GUI that does not replace the node management interface using POST on /api/cluster, but instead creates the interface at another time. The certificate also relates to creating a web based GUI so that the certificate lasts through the entire workflow and is not replaced by the cluster scoped certificate during POST on /api/cluster. To remove the temporary configuration settings when a custom setup workflow is complete, set the remove_precluster_config query parameter in a PATCH on /api/cluster. • Introduced in: 9.12 • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
active_directory	active_directory	
auto_enable_activity_tracking	boolean	Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes.

Name	Type	Description
auto_enable_analytics	boolean	Indicates how new SVMs will default "auto_enable_analytics" for new volumes.
configuration_backup	configuration_backup	
contact	string	
disaggregated	boolean	Specifies whether the cluster is designed for disaggregated storage.
dns_domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
license	license	License keys or NLF contents.
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.
management_interfaces	array[management_interfaces]	
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
nodes	array[nodes]	
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
password	string	Initial admin password used to create the cluster.
peering_policy	peering_policy	
san_optimized	boolean	Specifies if this cluster is an All SAN Array.
timezone	timezone	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7

Name	Type	Description
uuid	string	

Example request

```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "active_directory": {
    "force_account_overwrite": "",
    "fqdn": "server1.com",
    "name": "account1",
    "organizational_unit": "CN=Test",
    "password": "testpwd",
    "security": {
      "advertised_kdc_encryptions": [
        "string"
      ]
    },
    "username": "admin"
  },
  "configuration_backup": {
    "password": "yourpassword",
    "url": "http://10.224.65.198/backups",
    "username": "me"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "license": {
    "keys": [
      "AMEPOSOIKLKGEEEEDGNDEKSJDEEE"
    ]
  },
  "location": "building 1",
  "management_interface": {
    "ip": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  },
  "management_interfaces": [
    {
```

```
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "name": "cluster1",
  "name_servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "nodes": [
    {
      "anti_ransomware_version": "1.0",
      "cluster_interface": {
        "ip": {
          "address": "10.10.10.7"
        }
      },
      "cluster_interfaces": [
        {
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "controller": {
        "board": "System Board XXVIII",
        "cpu": {
          "count": 20,
          "firmware_release": "string",
          "processor": "string"
        },
        "failed_fan": {
          "count": 1,
          "message": {
            "code": "111411207",
            "message": "There are no failed fans."
          }
        },
        "failed_power_supply": {
          "count": 1,
          "message": {
            "code": "111411208",
            "message": "There are no failed power supplies."
          }
        },
        "flash_cache": [
          {
```

```
            "capacity": 1024000000000,
            "device_id": 0,
            "firmware_file": "X9170_O000Z6300NVM",
            "firmware_version": "NA05",
            "hardware_revision": "A1",
            "model": "X1970A",
            "part_number": "119-00207",
            "serial_number": "A22P5061550000187",
            "slot": "6-1",
            "state": "string"
          }
        ],
        "frus": [
          {
            "id": "string",
            "state": "string",
            "type": "string"
          }
        ],
        "memory_size": 1024000000,
        "over_temperature": "string"
      },
      "date": "2019-04-17 11:49:26 -0400",
      "external_cache": {
        "is_enabled": 1,
        "is_hya_enabled": 1,
        "is_rewarm_enabled": 1
      },
      "external_cache_bypass": {
        "enabled": 1,
        "large_read_ops_allow_percent": 100,
        "reset": 1
      },
      "ha": {
        "giveback": {
          "failure": {
            "code": 852126,
            "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
          },
          "state": "failed",
          "status": [
            {
              "aggregate": {
                "name": "aggr1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
              },
              "error": {
                "code": "852126",
                "message": "string"
              },
              "state": "string"
            }
          ]
        },
        "interconnect": {
          "adapter": "MVIA-RDMA",
          "state": "string"
        },
        "partners": [
          {
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "ports": [
          {
            "number": 0,
            "state": "active"
          }
        ],
        "takeover": {
          "failure": {
            "code": 852130,
            "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
          },
          "state": "failed"
        },
        "takeover_check": {
          "reasons": [
            "string"
          ]
        },
        "type": "string"
      },
      "location": "rack 2 row 5",
      "management_interface": {
        "ip": {
          "address": "10.10.10.7"
        }
      },
```

```
      "management_interfaces": [
        {
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "membership": "string",
      "metrocluster": {
        "ports": [
          {
            "name": "e1b"
          }
        ],
        "type": "string"
      },
      "model": "FAS3070",
      "name": "node-01",
      "nvlog": {
        "backing_type": "string",
        "swap_mode": "string"
      },
      "nvram": {
        "battery_state": "string",
        "id": 0
      },
      "owner": "Example Corp",
      "serial_number": "4048820-60-9",
      "service_processor": {
        "api_service": {
          "port": 0
        },
        "auto_config": {
          "ipv4_subnet": "ipv4_mgmt",
          "ipv6_subnet": "ipv6_mgmt"
        },
        "autoupdate_enabled": true,
        "backup": {
          "state": "string",
          "version": "11.6"
        },
        "dhcp_enabled": true,
        "firmware_version": "string",
        "ipv4_interface": {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "255.255.0.0",
```

```
          "setup_state": "string"
        },
        "last_update_state": "string",
        "link_status": "string",
        "mac_address": "string",
        "primary": {
          "state": "string",
          "version": "11.6"
        },
        "ssh_info": {
          "allowed_addresses": [
            "10.10.10.7/24"
          ]
        },
        "state": "string",
        "type": "string"
      },
      "snaplock": {
        "compliance_clock_time": "2018-06-04 15:00:00 -0400"
      },
      "state": "string",
      "storage_configuration": "string",
      "system_aggregate": {
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "system_id": 92027651,
      "system_machine_type": "7Y56-CTOWW1",
      "uptime": 300536,
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
      "vendor_serial_number": 791603000068,
      "vm": {
        "provider_type": "string"
      }
    }
  ],
  "ntp_servers": [
    "time.nist.gov",
    "10.98.19.20",
    "2610:20:6F15:15::27"
  ],
  "password": "mypassword",
  "peering_policy": {
    "minimum_passphrase_length": 0
  },
  "timezone": {
```

```
    "name": "America/New_York"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262245	The value provided is invalid.

Error Code	Description
655562	The NetBIOS name cannot be longer than 15 characters.
655915	A CIFS server for this SVM already exists. Having both a CIFS server and an Active Directory account for the same SVM is not supported. Use the \"vserver cifs delete\" command to delete the existing CIFS server and try the command again.
656464	Failed to create the Active Directory machine account. Reason: Invalid Credentials.
656465	Failed to create the Active Directory machine account. Reason: An account with this name already exists.
656466	Failed to create the Active Directory machine account. Reason: Unable to connect to any domain controllers.
656467	Failed to create the Active Directory machine account. Reason: Organizational-Unit not found.
656483	Active Directory account creation for the admin SVM requires an effective cluster version of 9.16.0 or later.
1179812	This node cannot be configured as a single node cluster.
1179813	Fields set for one node must be set for all nodes.
1179817	The IP address, subnet mask, and gateway must all be provided for cluster management interface.
1179818	The IP address and gateway must be of the same family.
1179821	An IP address and subnet mask conflicts with an existing entry.
1179823	An invalid netmask was provided.
1179824	An invalid gateway was provided.
1179825	All management and cluster config IP addresses must belong to the same address family.
1182809	Cluster creation is already complete.
2097165	An NTP server could not be reached.
7077919	The minimum length for the new password does not meet the policy.
8847361	Too many DNS domains provided.
8847362	Too many name servers provided.
8847394	An invalid DNS domain was provided.
8978433	An invalid license key was provided.
9240587	A name must be provided.

Error Code	Description
9240594	An invalid name was provided.
39387137	The URL provided is invalid.
131727360	A node could not be added to the cluster. This is a generic code, see response message for details.
131727388	Hostnames for NTP servers cannot be used without DNS configured.
131727389	URL and username are required for configuration backup.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

active_directory

Name	Type	Description
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it is overwritten and reused.
fqdn	string	Fully qualified domain name.
name	string	Active Directory account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account is created.
password	string	Administrator password required for Active Directory account creation, modification, and deletion.
security	active_directory_security	
username	string	Administrator username required for Active Directory account creation, modification, and deletion.

certificate

Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

Name	Type	Description
ip	ip	Object to setup an interface along with its default router.

ip

IP information

management_interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

Name	Type	Description
ip	node_setup_ip	The IP configuration for cluster setup.

cluster_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	

Name	Type	Description
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.

Name	Type	Description
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.

Name	Type	Description
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.

Name	Type	Description
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

Name	Type	Description
ip	node_setup_ip	The IP configuration for cluster setup.

management_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".

Name	Type	Description
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.
backup	backup	Provides the properties of the service processor backup partition.
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	

Name	Type	Description
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
name	string	
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.

Name	Type	Description
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

nodes

Complete node information

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.

Name	Type	Description
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	

Name	Type	Description
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.

Name	Type	Description
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

peering_policy

Name	Type	Description
authentication_required	boolean	Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers.

Name	Type	Description
encryption_required	boolean	Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers.
minimum_passphrase_length	integer	Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each

node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information.
  Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols
  such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

Name	Type	Description
name	string	The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone. The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0. **IANA time zone format** The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years. "Location" represents a compound name using additional forward slashes. An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis". **ONTAP traditional time zone** Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone. • example: America/New_York • Introduced in: 9.7 • x-nullable: true

cluster

Complete cluster information

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
active_directory	active_directory	
auto_enable_activity_tracking	boolean	Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes.
auto_enable_analytics	boolean	Indicates how new SVMs will default "auto_enable_analytics" for new volumes.
configuration_backup	configuration_backup	
contact	string	
disaggregated	boolean	Specifies whether the cluster is designed for disaggregated storage.

Name	Type	Description
dns_domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
license	license	License keys or NLF contents.
location	string	
management_interface	management_interface	The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.
management_interfaces	array[management_interfaces]	
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
nodes	array[nodes]	

Name	Type	Description
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
password	string	Initial admin password used to create the cluster.
peering_policy	peering_policy	
san_optimized	boolean	Specifies if this cluster is an All SAN Array.
timezone	timezone	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve cluster chassis

Cluster chassis endpoint overview

Overview

You can use the chassis GET API to retrieve all of the chassis information in the cluster.

Examples

Retrieving a list of chassis from the cluster

The following example shows the response with a list of chassis in the cluster:

```
# The API:
/api/cluster/chassis

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/chassis" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "id": "021352005981",
    "_links": {
      "self": {
        "href": "/api/cluster/chassis/021352005981"
      }
    }
  },
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/cluster/chassis"
  }
}
}
```

Retrieving a specific chassis from the cluster

The following example shows the response of the requested chassis. If there is no chassis with the requested ID, an error is returned.

```
# The API:
/api/cluster/chassis/{id}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/chassis/021352005981" -H
"accept: application/hal+json"

# The response:
{
"id": "021352005981",
"state": "ok",
```

```
"nodes": [
  {
    "name": "node-1",
    "uuid": "6ede364b-c3d0-11e8-a86a-00a098567f31",
    "position": "top",
    "usbs": {
      "supported": true,
      "enabled": true,
      "ports": [
        {
          "connected": false
        }
      ]
    },
    "pcis": {
      "cards": [
        {
          "slot": "0",
          "device": "Gigabit Ethernet I210",
          "info": "\t  e0M MAC Address:    d0:39:ea:3f:06:2b (auto-1000t-
fd-up) \n\t  e0S MAC Address:    d0:39:ea:3f:06:2c (auto-1000t-fd-up) \n\t
Device Type:        1533\n\t  Firmware Version:   3.25-0.0 0x800005D1\n"
        },
        {
          "slot": "0",
          "device": "Intel Lewisburg series chipset SATA Controller",
          "info": "\t  Additional Info: 0 (0xaaf00000)   \n\t
SHM2S86Q120GLM22NP FW1146 114473MB 512B/sect (SPG190108HJ)  \n"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/6ede364b-c3d0-11e8-a86a-00a098567f31"
      }
    }
  }
],
"frus": [
  {
    "id": "PSU2",
    "type": "psu",
    "state": "ok"
  },
  {
    "id": "PSU1",
```

```
      "type": "psu",
      "state": "ok"
    },
    {
      "id": "Fan2",
      "type": "fan",
      "state": "ok"
    },
    {
      "id": "Fan3",
      "type": "fan",
      "state": "ok"
    },
    {
      "id": "Fan1",
      "type": "fan",
      "state": "ok"
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/chassis/021352005981"
    }
  }
  }
```


Retrieve a collection of chassis

GET `/cluster/chassis`

Introduced In: 9.6

Retrieves a collection of chassis.

Related ONTAP commands

- `system chassis show`
- `system chassis fru show`

Learn more

- DOC /cluster/chassis

Parameters

Name	Type	In	Required	Description
shelves.uid	string	query	False	Filter by shelves.uid

Name	Type	In	Required	Description
id	string	query	False	Filter by id
frus.id	string	query	False	Filter by frus.id
frus.type	string	query	False	Filter by frus.type
frus.state	string	query	False	Filter by frus.state
state	string	query	False	Filter by state
nodes.name	string	query	False	Filter by nodes.name
nodes.pcis.cards.device	string	query	False	Filter by nodes.pcis.cards.device • Introduced in: 9.9
nodes.pcis.cards.info	string	query	False	Filter by nodes.pcis.cards.info • Introduced in: 9.9
nodes.pcis.cards.slot	string	query	False	Filter by nodes.pcis.cards.slot • Introduced in: 9.9
nodes.position	string	query	False	Filter by nodes.position • Introduced in: 9.8
nodes.usbs.enabled	boolean	query	False	Filter by nodes.usbs.enabled • Introduced in: 9.9

Name	Type	In	Required	Description
nodes.usbs.ports.connected	boolean	query	False	Filter by nodes.usbs.ports.connected • Introduced in: 9.9
nodes.usbs.supported	boolean	query	False	Filter by nodes.usbs.supported • Introduced in: 9.9
nodes.uuid	string	query	False	Filter by nodes.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[chassis]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "frus": [
        {
          "id": "string",
          "state": "string",
          "type": "string"
        }
      ],
      "id": "021352005981",
      "nodes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "pcis": {
            "cards": [
              {
                "device": "Intel Lewisburg series chipset SATA
Controller",
                "info": "Additional Info: 0 (0xaaf00000)
SHM2S86Q120GLM22NP FW1146 114473MB 512B/sect (SPG190108GW)",
                "slot": "0"
              }
            ]
          },
          "position": "top",
          "usbs": {
            "ports": [
              {}
            ]
```

```
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "shelves": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "uid": "7777841915827391056"
          }
        ],
        "state": "string"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

frus

Name	Type	Description
id	string	
state	string	
type	string	

_links

Name	Type	Description
self	href	

cards

Name	Type	Description
device	string	The description of the PCI card.
info	string	The info string from the device driver of the PCI card.
slot	string	The slot where the PCI card is placed. This can sometimes take the form of "6-1" to indicate slot and subslot.

pcis

Name	Type	Description
cards	array[cards]	

ports

Name	Type	Description
connected	boolean	Indicates whether or not the USB port has a device connected to it.

usbs

The status of the USB ports on the controller.

Name	Type	Description
enabled	boolean	Indicates whether or not the USB ports are enabled.
ports	array[ports]	
supported	boolean	Indicates whether or not USB ports are supported on the current platform.

nodes

List of nodes in chassis.

Name	Type	Description
_links	_links	
name	string	
pcis	pcis	
position	string	The position of the node in the chassis, when viewed from the rear of the system.
usbs	usbs	The status of the USB ports on the controller.
uuid	string	

shelf_reference

Shelf

Name	Type	Description
_links	_links	
uid	string	

chassis

Name	Type	Description
frus	array[frus]	List of FRUs in the chassis.
id	string	
nodes	array[nodes]	List of nodes in the chassis.
shelves	array[shelf_reference]	List of shelves in chassis.
state	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a chassis

GET `/cluster/chassis/{id}`

Introduced In: 9.6

Retrieves a specific chassis.

Related ONTAP commands

- `system chassis show`
- `system chassis fru show`

Learn more

- DOC /cluster/chassis

Parameters

Name	Type	In	Required	Description
id	string	path	True	Chassis ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
frus	array[frus]	List of FRUs in the chassis.
id	string	
nodes	array[nodes]	List of nodes in the chassis.
shelves	array[shelf_reference]	List of shelves in chassis.
state	string	

Example response


```
{
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "id": "021352005981",
  "nodes": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "pcis": {
        "cards": [
          {
            "device": "Intel Lewisburg series chipset SATA Controller",
            "info": "Additional Info: 0 (0xaaf00000)
SHM2S86Q120GLM22NP FW1146 114473MB 512B/sect (SPG190108GW)",
            "slot": "0"
          }
        ]
      },
      "position": "top",
      "usbs": {
        "ports": [
          {}
        ]
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "shelves": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uid": "7777841915827391056"
```

```
      }
    ],
    "state": "string"
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

frus

Name	Type	Description
id	string	
state	string	
type	string	

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cards

Name	Type	Description
device	string	The description of the PCI card.
info	string	The info string from the device driver of the PCI card.
slot	string	The slot where the PCI card is placed. This can sometimes take the form of "6-1" to indicate slot and subslot.

pcis

Name	Type	Description
cards	array[cards]	

ports

Name	Type	Description
connected	boolean	Indicates whether or not the USB port has a device connected to it.

usbs

The status of the USB ports on the controller.

Name	Type	Description
enabled	boolean	Indicates whether or not the USB ports are enabled.
ports	array[ports]	
supported	boolean	Indicates whether or not USB ports are supported on the current platform.

nodes

List of nodes in chassis.

Name	Type	Description
_links	_links	
name	string	
pcis	pcis	
position	string	The position of the node in the chassis, when viewed from the rear of the system.
usbs	usbs	The status of the USB ports on the controller.
uuid	string	

shelf_reference

Shelf

Name	Type	Description
_links	_links	
uid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve cluster counter tables

Cluster counter tables endpoint overview

Overview

The Counter Manager subsystem allows both manual and automated processes to access statistical information about various aspects of the ONTAP system. The information is most often utilized to assess the current performance of the system.

The data architecture is broken down into four components:

- Tables
- Rows
- Counters / Properties
- Aggregation

Tables

A table represents a collection of statistics that are grouped according to a common feature or function. An example counter manager table is for network adapters. This table would contain statistics related to the network adapter’s performance such as the number of packets, rate of flow and error counters.

A table is described by its schema which includes a detailed description about the various statistics included, their format and their purpose.

The table catalog is a collection of all the statistical tables that the ONTAP REST interface supports, which can be queried to find information about a data point of interest.

Rows

Each table is populated with a list of rows. Each row is identified by a unique key and represents a specific statistical entity within the system. For example, a system may contain multiple network adapters that are represented by several records in the network adapter table.

Counter / Property

A counter is the basic 'numeric' statistical unit of the architecture.

A property is the basic 'string' statistical unit of the architecture.

Counter values can be organized as singular values or into multi-dimensional arrays. An array can be one or two dimensional; formatted as a list of label / value pairs. Additional detail can be found in the "counter" model definition.

A table schema definition consists of multiple counters and properties.

Counters are classified according to their type. The available type options are the following:

- average
- rate
- raw
- delta
- percent

Average and percent counters specify a secondary counter called the 'denominator' in the schema. The client must use the provided and secondary counters to compute the final intended value.

For example:

```
Determining the average wait time for a workload per visit
Query the 'wait_time' and 'visits' field from a 'qos_detail' row:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/qos_detail/rows/<instance-
id>?fields=counters&counters.name=visits&#124;wait_time"
{
"counter_table": {
  "name": "qos_detail"
},
"id": "main-vsim1:_WAFL.CPU_ha",
"counters": [
  {
    "name": "visits",
    "value": 14631
  },
  {
    "name": "wait_time",
    "value": 167816
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/counter/tables/qos_detail/rows/<instance-id>"
  }
}
}
The average wait time per visit is calculated as 167816 / 14631 = 11
micro-seconds
```

In the above example, the average is calculated since boot-time. Sample periods are discussed in more detail below.

Counter Computations

The statistics available through the counter tables gives you information about a specific point in time. This data can be useful, but more often you are interested in the statistics over a period of time.

The procedure for calculating a statistic over a period of time involves the following:

- Collect a data sample at the beginning of the period. If the counter requires a denominator, this should be collected at the same time.
- Collect a second data sample at the end of the period. If the counter requires a denominator, collect a second sample at the same time.
- Calculate the final result using the collected information and the formula associated with the counter type below

All counters that are not of type 'raw' will require some computation to be useful.

```
----------------

'''

T1, T2 : The start and ending time of the sample period
C1, C2 : The counter value at the start and ending time of the period
D1, D2 : The denominator value at the start and ending time of the period
----------------

'''

Percentage = ((C2 - C1) x 100) / (D2 - D1)
Rate = (C2 - C1) / (T2 - T1)
Average = (C2 - C1) / (D2 - D1)
Delta = C2 - C1
----------------

'''
```

Aggregation

An aggregation is a logical container that consolidates the information from multiple entities into a single entity. There are two methods of aggregating tables:

- Automatic
- Combination.

Automatic

Tables with automatic aggregation are generated by consolidating all entities with matching identifiers. The underlying tables that contribute to the aggregated table are referenced by the following syntax: {table_name}:constituent.

Combination

Tables with combination aggregation are generated by consolidating all entities according to a unique field in the definition. The name of the combination table uses the following syntax: {table name}:{aggregation_name}.

An example combination table is 'volume:svm' table. This table aggregates all the volume statistics associated with a given vserver into a single table.

Multi-Dimensional Arrays

Numeric counters can be scalar, one-dimensional or two dimensional values. Scalars are the most common values which consist of a single numeric value. A one-dimensional array is commonly used to present histograms such as the following table:

```
< 1s     :  3
< 5s     : 10
< 60s    :  1
```

A counter endpoint response that contains the above table would be formatted as follows:

```
{
"name": "Sample One-Dimensional Counter",
"labels": [ "< 1s", "< 5s", "< 60s" ],
"values": [3, 10, 1]
}
```

A two-dimensional array is used to report information about more complex relationships. An example data set is below:

```
            New      Used
--------------------------

'''

Car             1         2
Truck           3         4
Motorcycle      5         6
```

A counter endpoint response that contains the above table would be formatted as follows:

```
{
"name": "Sample Two-Dimensional Counter",
"labels": [ "New", "Used" ],
"counters": [
  {
    "label": "Car",
    "values": [1, 2]
  },
  {
    "label": "Truck",
    "values": [3, 4]
  },
  {
    "label": "Motorcycle",
    "values": [5, 6]
  }
]
}
```

Filtering / Querying

The counter endpoints adhere to the same behavior as other endpoints, with exception of how queries are handled for nested array fields.

The default behavior when processing a nested array query is to return the entire array content on a match. The counter endpoints' behavior will only return entries in the array that match the query.

Counter responses can contain a significant amount of data. This behavior improves the response by only returning the information requested and eliminating extra work for the client.

For example:

```
Given the following array:
"list": [ "fruit_apple", "color_red" ]
When you apply the following query:
list=fruit*
The default query behavior will return the array as:
"list": [ "fruit_apple", "color_red" ]
The counter endpoints will return the array as:
"list": [ "fruit_apple" ]
```

Examples

Retrieving a table schema definition

This example retrieves the table description and schema definition for the qos_detail table.

```
# The API:
/api/support/counter/tables/{name}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/qos_detail?fields=*" -H "accept:
application/hal+json"

# The response:
{
"name": "qos_detail",
"description": "The qos_detail table that provides service center-based
statistical information.

*Note:*
This table returns a large number of rows. Querying by row name and using
wild cards may improve response times.",
"counter_schemas": [
  {
    "name": "in_latency_path",
    "description": "Determines whether or not service center-based
statistics are in the latency path.",
    "type": "raw",
    "unit": "none"
  },
  {
    "name": "node.name",
    "description": "System node name",
    "type": "string",
    "unit": "none"
  },
  {
    "name": "resource.name",
    "description": "Name of the associated resource.",
    "type": "string",
    "unit": "none"
  },
  {
    "name": "service_time",
    "description": "The workload's average service time per visit to the
service center.",
```

```
    "type": "average",
    "unit": "microsec",
    "denominator": {
      "name": "visits"
    }
  },
  {
    "name": "visits",
    "description": "The number of visits that the workload made to the
service center; measured in visits per second.",
    "type": "rate",
    "unit": "per_sec"
  },
  {
    "name": "wait_time",
    "description": "The workload's average wait time per visit to the
service center.",
    "type": "average",
    "unit": "microsec",
    "denominator": {
      "name": "visits"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/counter/tables/qos_detail"
  }
}
}
```


Query for tables that contain a keyword in the description

This example retrieves all table definitions contain the word "security" in their description.

```
# The API:
/api/support/counter/tables

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/?fields=name,description&description=*secur
ity*" -H "accept: application/hal+json"
```

```
# The response:
{
"records": [
  {
    "name": "csm_global",
    "description": "This table reports global statistics of the Cluster
Session Manager. The counters report the processing overhead of SpinNP
cryptography, both encryption and decryption, as carried out by CSM as it
handles cross-cluster data traffic, mostly on behalf of their data
protection operations. For example, a customer might seek to know the
processor time being consumed by these cryptographic operations in support
of their cross-cluster traffic. That data might help them evaluate the
performance impact of these security operations.",
    "_links": {
      "self": {
        "href": "/api/cluster/counter/tables/csm_global"
      }
    }
  },
  {
    "name": "file_directory",
    "description": "This table reports how many times file-directory jobs
were triggered to the set the file-security ACLS or SLAG ACLS. This
counter gives an indication how frequently the feature is being used to
set the ACLS on file-directory/volume.",
    "_links": {
      "self": {
        "href": "/api/cluster/counter/tables/file_directory"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href":
"/api/cluster/counter/tables?fields=name,description&description=*security
*"
  }
}
}
```

Query for a specific property within all table rows.

This example requests the property named 'node.name' for all 'wafl' table rows.

> The properties array content excludes any entries that do not match the provided query.

```
# The API:
/api/cluster/counter/tables/{counter_table.name}/rows

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/wafl/rows?properties.name=node.name&fields=
properties" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "id": "<instance id>",
    "properties": [
      {
        "name": "node.name",
        "value": "<node name>"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/cluster/counter/tables/wafl/rows/<instance id>"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/cluster/counter/tables/wafl/rows?properties.name=node.name&fields=pr
operties"
  }
}
}
```

Query for a list of properties that match a wildcard on a specific row.

This example queries for all properties associated with a row of the volume table.

The properties array content excludes any entries that do not match the provided query.

```
# The API:
/api/cluster/counter/tables/{counter_table.name}/rows/{id}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/volume/rows/<instance-
id>/?fields=properties&properties.name=svm*" -H "accept:
application/hal+json"

# The response:
{
"counter_table": {
  "name": "volume"
},
"id": "<instance-id>",
"properties": [
  {
    "name": "svm.name",
    "value": "<svm-name>"
  },
  {
    "name": "svm.uuid",
    "value": "4774d11c-a606-11ec-856f-005056bb7b59"
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/counter/tables/volume/rows/<instance-id>/"
  }
}
}
```

Query for a list of counters in a specific table row

This example queries for an explicit list of counters within a single row of the wafl table.

The counters array content excludes any entries that do not match the provided query.

```
# The API:
/api/cluster/counter/tables/{counter_table.name}/rows/{id}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/wafl/rows/<instance-
id>?fields=counters&counters.name=memory_used&#124;memory_free" -H
"accept: application/hal+json"

# The response:
{
"counter_table": {
  "name": "wafl"
},
"id": "<instance-id>",
"counters": [
  {
    "name": "memory_used",
    "value": 541
  },
  {
    "name": "memory_free",
    "value": 786
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/counter/tables/wafl/rows/<instance-id>"
  }
}
}
```

Retrieve counter tables with schema definitions

GET `/cluster/counter/tables`

Introduced In: 9.11

Returns a collection of counter tables and their schema definitions.

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name

Name	Type	In	Required	Description
description	string	query	False	Filter by description
counter_schemas.denominator.name	string	query	False	Filter by counter_schemas.denominator.name
counter_schemas.description	string	query	False	Filter by counter_schemas.description
counter_schemas.name	string	query	False	Filter by counter_schemas.name
counter_schemas.unit	string	query	False	Filter by counter_schemas.unit
counter_schemas.type	string	query	False	Filter by counter_schemas.type
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False
Limit the number of records returned.	return_records	boolean	query	False
The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1	return_timeout	integer	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[counter_table]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "counter_schemas": [
        {
          "denominator": {
            "name": "string"
          },
          "description": "string",
          "name": "string",
          "type": "string",
          "unit": "string"
        }
      ],
      "description": "string",
      "name": "string"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585368	The system has not completed it's initialization

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

counter_denominator

Counter used as the denominator in calculating the resulting value of averages and percentages.

Name	Type	Description
name	string	Counter name.

counter_schema

Schema definition of a single counter or property.

Name	Type	Description
denominator	counter_denominator	Counter used as the denominator in calculating the resulting value of averages and percentages.
description	string	Counter or property description.
name	string	Counter or property name.
type	string	Type of counter or property. Properties will always set this field to 'string'.
unit	string	Counter unit.

counter_table

Information for a single counter table.

Name	Type	Description
_links	_links	
counter_schemas	array[counter_schema]	Array of counter schema definitions.
description	string	Description of the table.
name	string	Table name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve counter rows

GET `/cluster/counter/tables/{counter_table.name}/rows`

Introduced In: 9.11

Returns a collection of counter rows.

Parameters

Name	Type	In	Required	Description
counter_table.name	string	path	True	Counter table name.

Name	Type	In	Required	Description
id	string	query	False	Filter by id
counters.labels	string	query	False	Filter by counters.labels
counters.counters.label	string	query	False	Filter by counters.counters.label
counters.counters.values	integer	query	False	Filter by counters.counters.values
counters.value	integer	query	False	Filter by counters.value
counters.values	integer	query	False	Filter by counters.values
counters.name	string	query	False	Filter by counters.name
properties.name	string	query	False	Filter by properties.name
properties.value	string	query	False	Filter by properties.value
aggregation.complete	boolean	query	False	Filter by aggregation.complete
aggregation.count	integer	query	False	Filter by aggregation.count
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False

Name	Type	In	Required	Description
Limit the number of records returned.	return_records	boolean	query	False
The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1	return_timeout	integer	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[counter_row]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "counter_table": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string"
      },
      "counters": [
        {
          "counters": [
            {
              "label": "string",
              "values": [
                "integer"
              ]
            }
          ],
          "labels": [
            "string"
          ],
          "name": "string",
          "values": [
            "integer"
          ]
        }
      ],
```

```
      "id": "string",
      "properties": [
        {
          "name": "string",
          "value": "string"
        }
      ]
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585320	Table requested is not found
8586228	Invalid counter name request.
8586229	Invalid counter property request.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

instance_counter_aggregation

Aggregation information about this counter.

Name	Type	Description
complete	boolean	The aggregation state for this row. For non-aggregated tables: Not present For aggregated tables: If all requests to remote nodes for counter data are successful, then this value will be 'true'. If any requests to remote nodes fail, then this value will be 'false'.
count	integer	Number of nodes included in the aggregation of this counter.

counter_table_reference

Counter table reference.

Name	Type	Description
_links	_links	
name	string	Counter table name.

counter2d

Counters that represent the second dimension of a two-dimension counter.

Name	Type	Description
label	string	Second dimension label.
values	array[integer]	List of values for the counter.

counter

Representation of a counter and contains one of the following:

- Scalar counter populates the 'name' and 'value' fields.
- A 1D array populates the 'name', 'labels' and 'values' fields.
- A 2D array is represented as a list of counter entries.

```
"counters": [
  // Scalar counter
  {
      "name": "memory",
      "value": 4480
  },
  // one dimensional array "sys_read_latency_hist"
  {
      "name": "sys_read_latency_hist",
      "labels": ["0 - &lt;1ms", "1 - &lt;2ms", ...],
      "values": [0, 0, ...]
  },
  // Two dimensional array "foo" with ["Label 1", "Label 2"] as the
first
  // array dimension and labels ["w", "x", "y"] for the 2nd dimension
  {
      "name": "foo",
      "labels": ["Label 1", "Label 2"],
      "counters": [
          {
              "label": "x",
              "values": [0, 0]
          },
          {
              "label": "y",
              "values": [0, 0]
          },
          {
              "label": "z",
              "values": [0, 0]
          }
      ]
  }
```

Name	Type	Description
counters	array[counter2d]	List of labels and values for the second dimension.
labels	array[string]	List of labels for the first dimension.
name	string	Counter name.
value	integer	Scalar value.

Name	Type	Description
values	array[integer]	List of values in a one-dimensional counter.

counter_property

Single string counter entry.

Name	Type	Description
name	string	Property name.
value	string	Property value.

counter_row

A single row of counter and property counter data.

Name	Type	Description
_links	_links	
aggregation	instance_counter_aggregation	Aggregation information about this counter.
counter_table	counter_table_reference	Counter table reference.
counters	array[counter]	Array of counter name/value pairs.
id	string	Unique row identifier.
properties	array[counter_property]	Array of property name/value pairs.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a counter row

GET `/cluster/counter/tables/{counter_table.name}/rows/{id}`

Introduced In: 9.11

Returns a single counter row.

Parameters

Name	Type	In	Required	Description
counter_table.name	string	path	True	Counter table name.
id	string	path	True	Unique row identifier.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
aggregation	instance_counter_aggregation	Aggregation information about this counter.
counter_table	counter_table_reference	Counter table reference.
counters	array[counter]	Array of counter name/value pairs.

Name	Type	Description
id	string	Unique row identifier.
properties	array[counter_property]	Array of property name/value pairs.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "counter_table": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string"
  },
  "counters": [
    {
      "counters": [
        {
          "label": "string",
          "values": [
            "integer"
          ]
        }
      ],
      "labels": [
        "string"
      ],
      "name": "string",
      "values": [
        "integer"
      ]
    }
  ],
  "id": "string",
  "properties": [
    {
      "name": "string",
      "value": "string"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585320	Table requested is not found
8586228	Invalid counter name request.
8586229	Invalid counter property request.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

instance_counter_aggregation

Aggregation information about this counter.

Name	Type	Description
complete	boolean	The aggregation state for this row. For non-aggregated tables: Not present For aggregated tables: If all requests to remote nodes for counter data are successful, then this value will be 'true'. If any requests to remote nodes fail, then this value will be 'false'.
count	integer	Number of nodes included in the aggregation of this counter.

counter_table_reference

Counter table reference.

Name	Type	Description
_links	_links	
name	string	Counter table name.

counter2d

Counters that represent the second dimension of a two-dimension counter.

Name	Type	Description
label	string	Second dimension label.

Name	Type	Description
values	array[integer]	List of values for the counter.

counter

Representation of a counter and contains one of the following:

- Scalar counter populates the 'name' and 'value' fields.
- A 1D array populates the 'name', 'labels' and 'values' fields.
- A 2D array is represented as a list of counter entries.

```
"counters": [
// Scalar counter
{
    "name": "memory",
    "value": 4480
},
// one dimensional array "sys_read_latency_hist"
{
    "name": "sys_read_latency_hist",
    "labels": ["0 - &lt;1ms", "1 - &lt;2ms", ...],
    "values": [0, 0, ...]
},
// Two dimensional array "foo" with ["Label 1", "Label 2"] as the first
// array dimension and labels ["w", "x", "y"] for the 2nd dimension
{
    "name": "foo",
    "labels": ["Label 1", "Label 2"],
    "counters": [
        {
            "label": "x",
            "values": [0, 0]
        },
        {
            "label": "y",
            "values": [0, 0]
        },
        {
            "label": "z",
            "values": [0, 0]
        }
    ]
}
```

Name	Type	Description
counters	array[counter2d]	List of labels and values for the second dimension.
labels	array[string]	List of labels for the first dimension.
name	string	Counter name.
value	integer	Scalar value.
values	array[integer]	List of values in a one-dimensional counter.

counter_property

Single string counter entry.

Name	Type	Description
name	string	Property name.
value	string	Property value.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve counter table details

GET `/cluster/counter/tables/{name}`

Introduced In: 9.11

Returns the information about a single counter table.

Parameters

Name	Type	In	Required	Description
name	string	path	True	Counter table name.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
counter_schemas	array[counter_schema]	Array of counter schema definitions.
description	string	Description of the table.
name	string	Table name.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "counter_schemas": [
    {
      "denominator": {
        "name": "string"
      },
      "description": "string",
      "name": "string",
      "type": "string",
      "unit": "string"
    }
  ],
  "description": "string",
  "name": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585320	Table requested is not found
8585368	The system has not completed it's initialization

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

counter_denominator

Counter used as the denominator in calculating the resulting value of averages and percentages.

Name	Type	Description
name	string	Counter name.

counter_schema

Schema definition of a single counter or property.

Name	Type	Description
denominator	counter_denominator	Counter used as the denominator in calculating the resulting value of averages and percentages.
description	string	Counter or property description.
name	string	Counter or property name.
type	string	Type of counter or property. Properties will always set this field to 'string'.
unit	string	Counter unit.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster firmware history

Cluster firmware history endpoint overview

Overview

Use this API to retrieve a history of firmware update requests. This API supports GET calls.

Examples

Retrieving history of firmware updates

The following example retrieves a history of firmware updates performed on the cluster.
Note that if the *fields=** parameter is not specified, only the job ID and start time are returned.
Filters can be added on the fields to limit the results.

```
# The API:
GET /api/cluster/firmware/history

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/firmware/history/?fields=*" -H
"accept: application/hal+json"

# The response:
200 OK
{
"records": [
  {
    "start_time": "1970-01-01T00:02:03+00:00",
    "job": {
      "uuid": "adf700c2-b50e-11ea-a54f-005056bbec43"
    },
    "node": {
```

```
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node1"
    },
    "fw_file_name": "all_disk_fw.zip",
    "fw_update_state": "starting_workers",
    "end_time": "1970-01-01T00:07:36+00:00",
    "update_status": [
      {
        "worker": {
          "node": {
            "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
            "name": "node1"
          },
          "state": "failed",
          "error": {
            "message": "A firmware file already exists.",
            "code": 2228327
          }
        }
      },
      {
        "worker": {
          "node": {
            "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ef",
            "name": "node2"
          },
          "state": "complete",
          "error": {
            "message": "Success",
            "code": 0
          }
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/cluster/firmware/history/1970-01-01T00%3A02%3A03-
00%3A00/adf700c2-b50e-11ea-a54f-005056bbec43"
      }
    }
  },
  {
    "start_time": "1970-01-01T00:02:03+00:00",
    "job": {
      "uuid": "f84adabe-b50e-11ea-a54f-005056bbec43"
    },
```

```
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node1"
    },
    "fw_file_name": "all_shelf_fw.zip",
    "fw_update_state": "completed",
    "end_time": "1970-01-01T00:07:36+00:00",
    "update_status": [
      {
        "worker": {
          "node": {
            "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
            "name": "node1"
          },
          "state": "failed",
          "error": {
            "message": "A firmware file already exists.",
            "code": 2228327
          }
        }
      },
      {
        "worker": {
          "node": {
            "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ef",
            "name": "node2"
          },
          "state": "complete",
          "error": {
            "message": "Success",
            "code": 0
          }
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/cluster/firmware/history/1970-01-01T00%3A02%3A03-
00%3A00/f84adabe-b50e-11ea-a54f-005056bbec43"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
```

```
      "href": "/api/cluster/firmware/history/?fields=%2A"
    }
  }
  }
```

Retrieve history details for firmware update requests

GET `/cluster/firmware/history`

Introduced In: 9.8

Retrieves the history details for firmware update requests.

Learn more

- DOC /cluster/firmware/history

Parameters

Name	Type	In	Required	Description
start_time	string	query	False	Filter by start_time
fw_file_name	string	query	False	Filter by fw_file_name
fw_update_state	string	query	False	Filter by fw_update_state
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
job.uuid	string	query	False	Filter by job.uuid
end_time	string	query	False	Filter by end_time
update_status.worker.state	string	query	False	Filter by update_status.worker.state
update_status.worker.error.code	integer	query	False	Filter by update_status.worker.error.code

Name	Type	In	Required	Description
update_status.worker.error.message	string	query	False	Filter by update_status.worker.error.message
update_status.worker.node.uuid	string	query	False	Filter by update_status.worker.node.uuid
update_status.worker.node.name	string	query	False	Filter by update_status.worker.node.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[firmware_history]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "end_time": "2019-02-02 14:00:00 -0500",
      "fw_file_name": "all_disk_fw.zip",
      "fw_update_state": "string",
      "job": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "string"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "start_time": "2019-02-02 14:00:00 -0500",
      "update_status": [
        {
          "worker": {
            "error": {
              "code": 2228325,
              "message": "Cannot open local staging ZIP file
```

```
disk_firmware.zip"
            },
            "node": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "state": "waiting_to_retry"
          }
        }
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

firmware_history_update_state_error

Name	Type	Description
code	integer	Code corresponding to the status message.
message	string	Error message returned when a firmware update job fails.

worker

Name	Type	Description
error	firmware_history_update_state_error	
node	node	
state	string	The state of each worker that a node is controlling.

firmware_history_update_state

Name	Type	Description
worker	worker	

firmware_history

Name	Type	Description
_links	_links	
end_time	string	End time of this update request.
fw_file_name	string	Name of the firmware file.
fw_update_state	string	
job	job_link	
node	node	
start_time	string	Start time of this update request.
update_status	array[firmware_history_update_state]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View and manage cluster jobs

Cluster jobs endpoint overview

Overview

You can use this API to view and manipulate jobs. Jobs provide information about asynchronous operations. Some long-running jobs are paused or cancelled by calling a PATCH request. Individual operations indicate if they support PATCH requests on the job. After a job transitions to a terminal state, it is deleted after a default time of 300 seconds. Attempts to call a GET or PATCH request on the job returns a 404 error code After the job has been deleted.

Example

The following examples show how to retrieve and update a job state:

Retrieving job information

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/b5145e1d-b53b-11e8-8252-
005056bbd8f5" -H "accept: application/json"

# The response:
{
  "uuid": "b5145e1d-b53b-11e8-8252-005056bbd8f5",
  "code": 0,
  "description": "Cluster Backup Job",
  "state": "running",
  "message": "creating_node_backups",
  "_links": {
      "self": {
          "href": "/api/cluster/jobs/b5145e1d-b53b-11e8-8252-005056bbd8f5"
      }
  }
}
```

Updating a job that supports the new state

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/jobs/b5145e1d-b53b-11e8-8252-
005056bbd8f5?action=cancel" -H "accept: application/json"
```

Retrieve recent asynchronous jobs

GET `/cluster/jobs`

Introduced In: 9.6

Retrieves a list of recently running asynchronous jobs. After a job transitions to a failure or success state, it is deleted after a default time of 300 seconds.

Parameters

Name	Type	In	Required	Description
error.code	string	query	False	Filter by error.code • Introduced in: 9.9
error.message	string	query	False	Filter by error.message • Introduced in: 9.9
error.arguments.code	string	query	False	Filter by error.arguments.code • Introduced in: 9.9
error.arguments.message	string	query	False	Filter by error.arguments.message • Introduced in: 9.9
code	integer	query	False	Filter by code

Name	Type	In	Required	Description
state	string	query	False	Filter by state
message	string	query	False	Filter by message
start_time	string	query	False	Filter by start_time
end_time	string	query	False	Filter by end_time
node.name	string	query	False	Filter by node.name • Introduced in: 9.11
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.8
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.8
uuid	string	query	False	Filter by uuid
description	string	query	False	Filter by description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[job]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "code": 0,
      "description": "App Snapshot Job",
      "end_time": "string",
      "error": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "message": "Complete: Successful",
      "node": {
        "name": "string"
      },
      "start_time": "string",
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

node

The node where this job was run

Name	Type	Description
name	string	The name of the node

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

job

Name	Type	Description
_links	_links	
code	integer	If the state indicates "failure", this is the final error code.
description	string	The description of the job to help identify it independent of the UUID.
end_time	string	The time the job ended.
error	error	The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.
message	string	A message corresponding to the state of the job providing additional details about the current state.
node	node	The node where this job was run
start_time	string	The time the job started.
state	string	The state of the job.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve details of an asynchronous job

GET `/cluster/jobs/{uuid}`

Introduced In: 9.6

Retrieves the details of a specific asynchronous job. After a job transitions to a failure or success state, it is deleted after a default time of 300 seconds.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Job UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
code	integer	If the state indicates "failure", this is the final error code.
description	string	The description of the job to help identify it independent of the UUID.
end_time	string	The time the job ended.
error	error	The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.
message	string	A message corresponding to the state of the job providing additional details about the current state.
node	node	The node where this job was run
start_time	string	The time the job started.
state	string	The state of the job.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "code": 0,
  "description": "App Snapshot Job",
  "end_time": "string",
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "message": "Complete: Successful",
  "node": {
    "name": "string"
  },
  "start_time": "string",
  "state": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

node

The node where this job was run

Name	Type	Description
name	string	The name of the node

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the state of an asynchronous job

PATCH `/cluster/jobs/{uuid}`

Introduced In: 9.6

Updates the state of a specific asynchronous job.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Job UUID

Name	Type	In	Required	Description
action	string	query	False	Requests a job to pause, resume, or cancel. Note that not all jobs support these actions. A job can only be resumed if it is in a paused state. After you successfully request a job to be cancelled, the job state changes to either success or failure. • enum: ["pause", "resume", "cancel"]

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
458762	Job is already in a terminal state.
458773	The Job Manager is not initialized.
458771	The specified job is running.
458776	The specified job is not currently running.
458783	This job does not support pause.
458784	This job does not support cancel.

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve capacity pool licenses

Cluster licensing capacity-pools endpoint overview

Overview

Capacity pool licenses are installed on and managed by the license manager. Each ONTAP node that is using the capacity pools licensing model is associated with a capacity pool license from which capacity is leased for data aggregates.

This API is used to retrieve information about associations between ONTAP nodes in the cluster and capacity pool licenses. It also reports how much capacity each node is consuming from the capacity pool.

Examples

Retrieving a collection of capacity pools associated with the cluster

This example retrieves a collection that contains two capacity pool licenses, each of which is associated with an HA pair of nodes in a four-node cluster.

```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/capacity-pools"
```

```
# Response
200 OK

# JSON Body
{
"records":[
  {
    "serial_number":"390000100",
    "license_manager": {
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-
11e0-ae1c-112233445566"
         }
      }
    },
    "nodes":[
      {
        "node":{
          "name":"node-1",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563411"
        },
        "used_size":1099511627776,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563411"
          }
        }
      },
      {
        "node":{
          "name":"node-2",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563412"
        },
        "used_size":1099511627776,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563412"
          }
        }
      }
    ],
    "_links":{
```

```
      "self":{
        "href":"/api/cluster/licensing/capacity-pools/390000100"
      }
    }
  },
  {
    "serial_number":"390000101",
    "license_manager": {
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-
11e0-ae1c-112233445566"
         }
      }
    },
    "nodes":[
      {
        "node":{
          "name":"node-3",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563413"
        },
        "used_size":2199023255552,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563413"
          }
        }
      },
      {
        "node":{
          "name":"node-4",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563414"
        },
        "used_size":2199023255552,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563414"
          }
        }
      }
    ],
    "_links":{
      "self":{
```

```
        "href":"/api/cluster/licensing/capacity-pools/390000101"
      }
    }
  }
],
"num_records":2,
"_links":{
  "self":{
    "href":"/api/cluster/licensing/capacity-pools"
  }
}
}
```


Retrieving information about nodes associated with a specific capacity pool license

This example retrieves information about the nodes that are associated with a capacity pool license of the serial number 390000100.


```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/capacity-
pools/390000100"

# Response
200 OK

# JSON Body
{
"serial_number":"390000100",
"license_manager": {
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-11e0-
ae1c-112233445566"
     }
  }
},
"nodes":[
  {
    "node":{
      "name":"node-1",
      "uuid":"4ea7a442-86d1-11e0-ae1c-123478563411"
    },
    "used_size":1099511627776,
    "_links":{
      "self":{
```

```
          "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563411"
        }
      }
    },
    {
      "node":{
        "name":"node-2",
        "uuid":"4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "used_size":1099511627776,
      "_links":{
        "self":{
          "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      }
    }
  ],
  "_links":{
    "self":{
      "href":"/api/cluster/licensing/capacity-pools/390000100"
    }
  }
  }
```


Retrieve capacity pools

GET `/cluster/licensing/capacity-pools`

Introduced In: 9.8

Retrieves a collection of capacity pools.

Learn more

- DOC /cluster/licensing/capacity-pools

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

Name	Type	In	Required	Description
serial_number	string	query	False	Filter by serial_number

Name	Type	In	Required	Description
license_manager.uuid	string	query	False	Filter by license_manager.uuid
nodes.node.uuid	string	query	False	Filter by nodes.node.uuid
nodes.node.name	string	query	False	Filter by nodes.node.name
nodes.used_size	integer	query	False	Filter by nodes.used_size
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "license_manager": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
      },
      "nodes": [
        {
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "used_size": 0
        }
      ],
      "serial_number": 390000100
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

license_manager

License manager instance where this capacity pool license in installed.

Name	Type	Description
_links	self_link	
uuid	string	

_links

Name	Type	Description
self	href	

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

nodes

Information on a node from the capacity licensing perspective.

Name	Type	Description
node	node_reference	

Name	Type	Description
used_size	integer	Capacity, in bytes, that is currently used by the node.

records

Information on a capacity pool license and how it is associated with the cluster.

Name	Type	Description
_links	self_link	
license_manager	license_manager	License manager instance where this capacity pool license in installed.
nodes	array[nodes]	Nodes in the cluster associated with this capacity pool.
serial_number	string	Serial number of the capacity pool license.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve capacity pool information

GET `/cluster/licensing/capacity-pools/{serial_number}`

Introduced In: 9.8

Retrieves information about the capacity pool.

Learn more

- DOC /cluster/licensing/capacity-pools

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

Name	Type	In	Required	Description
serial_number	string	path	True	Serial number of the capacity pool license.
license_manager.uuid	string	query	False	Filter by license_manager.uuid
nodes.node.uuid	string	query	False	Filter by nodes.node.uuid
nodes.node.name	string	query	False	Filter by nodes.node.name
nodes.used_size	integer	query	False	Filter by nodes.used_size
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
license_manager	license_manager	License manager instance where this capacity pool license in installed.

Name	Type	Description
nodes	array[nodes]	Nodes in the cluster associated with this capacity pool.
serial_number	string	Serial number of the capacity pool license.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "license_manager": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
  },
  "nodes": [
    {
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "used_size": 0
    }
  ],
  "serial_number": 390000100
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

license_manager

License manager instance where this capacity pool license in installed.

Name	Type	Description
_links	self_link	
uuid	string	

_links

Name	Type	Description
self	href	

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

nodes

Information on a node from the capacity licensing perspective.

Name	Type	Description
node	node_reference	
used_size	integer	Capacity, in bytes, that is currently used by the node.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster license managers

Cluster licensing license-managers endpoint overview

Overview

This API is used to manage information about the license manager instance associated with the cluster.

When an ONTAP cluster is initially created to use the capacity pools licensing model, information about the license manager instance that the cluster should use is pre-configured. Generally, this configuration does not need to be updated unless the license manager instance changes its IP address.

The license manager is currently bundled with the ONTAP Select Deploy utility and runs on the same VM as ONTAP Select Deploy. Use this API to update the license manager IP address when the Deploy VM changes its IP address.

Examples

Retrieving information about the license manager instance associated with the cluster

```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/license-managers"

# Response
200 OK

# JSON Body
{
"records": [
  {
    "uuid":"4ea7a442-86d1-11e0-ae1c-112233445566",
    "uri": {
      "host":"10.1.1.1",
    },
    "default":true
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/cluster/licensing/license-managers"
  }
}
}
```

Updating an existing license manager instance

```
# API
curl -X PATCH "https://<mgmt-ip>/api/cluster/licensing/license-
managers/4ea7a442-86d1-11e0-ae1c-112233445566"

# JSON Body
{
"uri": {
  "host":"10.1.1.3"
}
}

# Response
202 Accepted
```

Retrieve license managers

GET `/cluster/licensing/license-managers`

Introduced In: 9.8

Retrieves a collection of license managers.

Learn more

- DOC /cluster/licensing/license-managers

Related ONTAP commands

- `system license license-manager show`

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
uri.host	string	query	False	Filter by uri.host
default	boolean	query	False	Filter by default
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uri": {
        "host": "10.1.1.1"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

uri

License manager URI.

Name	Type	Description
host	string	License manager host name, IPv4 or IPv6 address.

records

Information on a license manager instance associated with the cluster.

Name	Type	Description
_links	self_link	
default	boolean	Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance.
uri	uri	License manager URI.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the license manager information

GET `/cluster/licensing/license-managers/{uuid}`

Introduced In: 9.8

Retrieves information about the license manager.

Learn more

- DOC /cluster/licensing/license-managers

Related ONTAP commands

- `system license license-manager show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	
uri.host	string	query	False	Filter by uri.host
default	boolean	query	False	Filter by default
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
default	boolean	Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance.
uri	uri	License manager URI.
uuid	string	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "uri": {
    "host": "10.1.1.1"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

uri

License manager URI.

Name	Type	Description
host	string	License manager host name, IPv4 or IPv6 address.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the license manager configuration

PATCH `/cluster/licensing/license-managers/{uuid}`

Introduced In: 9.8

Updates the license manager configuration.

Learn more

- DOC /cluster/licensing/license-managers

Related ONTAP commands

- `system license license-manager modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
default	boolean	Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance.
uri	uri	License manager URI.
uuid	string	

Example request

```
{
  "uri": {
    "host": "10.1.1.1"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115532	The requested update to the license manager information failed.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
errors	array[returned_error]	

Example error

```
{
  "errors": [
    {
      "arguments": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "code": "4",
      "message": "entry doesn't exist",
      "target": "uuid"
    }
  ]
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

uri

License manager URI.

Name	Type	Description
host	string	License manager host name, IPv4 or IPv6 address.

license_manager

Information on a license manager instance associated with the cluster.

Name	Type	Description
default	boolean	Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance.
uri	uri	License manager URI.
uuid	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster licensing

Cluster licensing licenses endpoint overview

Overview

Licensing allows you to tailor a system to meet an organization's specific needs. You can enable new features by purchasing a license from a NetApp sales associate. After installation of the license, the new feature is available immediately.

This interface manages licenses according to their supported feature. By default, the interface displays packages with installed licenses, but you can also return unlicensed packages.

Each feature has a compliance state that is indicated at the package level. Individual licenses also contain a compliance state indicated in the "licenses" array. The state of the package is determined by analyzing the underlying licenses according to the following criteria:

- Licensing terms
- Cluster state

Licensing terms

The licensing terms define the conditions under which a package is considered "compliant". Individual licenses are evaluated based on the following:

- Scope
- Time period
- Usage

Scope

A package can be licensed under the following scopes:

- Site - Permits the feature to be used by any node in any cluster.
- Cluster - Permits the feature to be used by any node in a single specific cluster.
- Node - Permits the authorized node to use the feature. Within a cluster, if you don't supply every node with a valid license, the package state indicates "noncompliant". You must purchase a license for each node in a cluster for the package to be considered "compliant".

Time period

Some package licenses are only valid for a limited period of time. After a license has expired, the package state changes to "noncompliant". You need to purchase a new license for the package to return to a "compliant" state.

Usage

Some package licenses have additional terms that need to be maintained to keep a license in compliance. These conditions are defined by the individual license. For example, a license might define the maximum amount of storage that a node can allocate for the license to be "compliant".

Cluster state

A cluster's state consists of the following:

- Node online status
- Node cluster membership

Some features require that a node be online to display a valid compliance state. If a node cannot be reached or is not known to the cluster, the individual license might indicate an "unknown" state.

Licensing keys

A license is issued in one of the following three formats:

- 28-character key
- NetApp License File Version 1 (NLFv1)
- NetApp License File Version 2 (NLFv2)

Overview of NLFv1 and NLFv2 License Formats

NLFv1 and NLFv2 licenses are both JSON based files that allow features to be enabled.

The difference between the two formats is that a NLFv2 license allows multiple features to be enabled with a single file. A NLFv1 license is capable of enabling a single feature.

These licenses are identified, in the various methods, as follows:

Format	Identifying Keys
28 Character Key	name / serial_number
NLFv1	name / serial_number
NLFv2	licenses.installed_license / serial_number

The following is an example of a 28-character key:

```
AMEPOSOIKLKGEEEEDGNDEKSJDEEE
```

The following is an example of an NLFv1 key:


```
{
"statusResp": {
"version": "1",
"serialNumber": "123456789",
"message": "Success",
"licenses": {
  "capacity": "1",
  "type": "capacity",
  "licenseProtocol": "FABRICPOOL-TB",
  "package": "FabricPool",
  "licenseScope": "cluster"
},
"snStatus": "Active",
"product": "fabricpool",
"statusCode": "S007"
},
"Signature": "signatureABC"
}
```


The following is an example of an NLFv2 key:

```
{
"statusResp": {
"version": "2",
"serialNumber": "123456789",
"message": "Success",
"product": "Sample NLFv2 License",
"licenses": {
  "capacity": "1",
  "type": "capacity",
  "HostID": "5554444",
  "package": [ "NFS", "CIFS" ],
  "licenseScope": "node"
},
"snStatus": "Active",
"statusCode": "S007"
},
"Signature": "signatureABC"
}
```


You can use this API to submit any format to enable features.

Examples

Retrieving a collection of licenses organized by package

This example retrieves a collection that contains one entry for each package (filtered to only the 'fabricpool' package).

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=fabricpool"

# Response
200 OK

# JSON Body
{
"records": [
{
  "name": "fabricpool",
  "scope": "cluster",
  "state": "compliant",
  "description": "FabricPool License",
  "licenses": [
  {
    "owner": "testcluster-1",
    "serial_number": "4149027342",
    "state": "compliant",
    "capacity": {
    "maximum_size": 1099511627776,
    "used_size": 0
    }
  }
  ],
  "_links": {
  "self": {
    "href": "/api/cluster/licensing/licenses/fabricpool"
  }
  }
}
],
"num_records": 1,
"_links": {
"self": {
  "href": "/api/cluster/licensing/licenses/?fields=*&name=fabricpool"
}
}
}
```

Retrieving a collection of licenses organized by package - for package cloud

The following example retrieves a collection that contains one entry for each package (filtered to only the 'cloud' package). The cloud package, in this example, is in the enforcement period as the license has expired.

The REST GET output displays an additional field 'shutdown_imminent' to indicate that the system will shutdown.

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=cloud"

# Response
200 OK

# JSON Body
{
"records": [
  {
    "name": "cloud",
    "scope": "node",
    "state": "noncompliant",
    "description": "Cloud ONTAP License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "unlicensed"
    },
    "licenses": [
      {
        "owner": "test-vsim1",
        "serial_number": "90120130000000000001",
        "active": false,
        "evaluation": true,
        "expiry_time": "2021-10-26T19:57:41Z",
        "shutdown_imminent": true,
        "compliance": {
          "state": "noncompliant"
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/cluster/licensing/licenses/cloud"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/cluster/licensing/licenses/?fields=*&name=cloud"
```

```
  }
}
}
```

Retrieving a collection of licenses installed with NLFv2

This example retrieves a collection of licenses that were installed by a NLFv2 formatted license.

> The license is referenced by the installed license "Core*Bundle" and the license serial number "4212426890"

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&licenses.installed_license=Cor
e*Bundle&serial_number=4212426890"

# Response
200 OK

# JSON Body
{
"records": [
  {
    "name": "nfs",
    "scope": "node",
    "state": "noncompliant",
    "description": "NFS License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
```

```
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/nfs/?licenses.installed_license=Core*Bund
le"
      }
    }
  },
  {
    "name": "cifs",
    "scope": "node",
    "state": "noncompliant",
    "description": "CIFS License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
```

```
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/cifs/?licenses.installed_license=Core*Bun
dle"
      }
    }
  },
  {
    "name": "iscsi",
    "scope": "node",
    "state": "noncompliant",
    "description": "iSCSI License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
```

```
      "self": {
        "href":
"/api/cluster/licensing/licenses/iscsi/?licenses.installed_license=Core*Bu
ndle"
      }
    }
  },
  {
    "name": "fcp",
    "scope": "node",
    "state": "noncompliant",
    "description": "FCP License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/fcp/?licenses.installed_license=Core*Bund
le"
      }
```

```
      }
    },
    {
      "name": "snaprestore",
      "scope": "node",
      "state": "noncompliant",
      "description": "SnapRestore License",
      "entitlement": {
        "action": "acquire_license",
        "risk": "medium"
      },
      "licenses": [
        {
          "owner": "test-vsim3",
          "active": false,
          "evaluation": false,
          "compliance": {
            "state": "unlicensed"
          }
        },
        {
          "owner": "test-vsim4",
          "installed_license": "Core Bundle",
          "host_id": "4212426890",
          "serial_number": "4212426890",
          "active": true,
          "evaluation": false,
          "compliance": {
            "state": "compliant"
          },
          "capacity": {
            "maximum_size": 10995116277760
          }
        }
      ],
      "_links": {
        "self": {
          "href":
"/api/cluster/licensing/licenses/snaprestore/?licenses.installed_license=C
ore*Bundle"
        }
      }
    },
    {
      "name": "flexclone",
      "scope": "node",
```

```
    "state": "noncompliant",
    "description": "FlexClone License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/flexclone/?licenses.installed_license=Cor
e*Bundle"
      }
    }
  },
  {
    "name": "nvme_of",
    "scope": "node",
    "state": "noncompliant",
    "description": "NVMe-oF License",
     "licenses": [
     {
        "owner": "test-vsim3",
```

```
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/nvme_of/?licenses.installed_license=Core*
Bundle"
      }
    }
  },
  {
    "name": "s3",
    "scope": "node",
    "state": "noncompliant",
    "description": "S3 License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsim3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
```

```
      },
     {
       "owner": "test-vsim4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/s3/?licenses.installed_license=Core*Bundl
e"
      }
    }
  }
],
"num_records": 8,
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses?fields=*&licenses.installed_license=Core*
Bundle&serial_number=4212426890"
  }
}
}
```


Retrieving a collection of installed licenses

This example retrieves a collection containing all packages (except base) that have installed licenses.

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=!base"

# Response
200 OK
```

```
# JSON Body
{
"records": [
{
  "name": "nfs",
  "scope": "node",
  "state": "compliant",
  "description": "NFS License",
  "entitlement": {
    "action": "none",
    "risk": "low"
  },
  "licenses": [
  {
    "owner": "testcluster-1",
    "serial_number": "1-81-0000000000000004149027492",
    "state": "compliant"
  }
  ],
  "_links": {
  "self": {
    "href": "/api/cluster/licensing/licenses/nfs"
  }
  }
},
{
  "name": "cifs",
  "scope": "node",
  "state": "compliant",
  "description": "CIFS License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "medium"
  },
  "licenses": [
  {
    "owner": "testcluster-1",
    "serial_number": "1-81-0000000000000004149027492",
    "state": "compliant"
  }
  ],
  "_links": {
  "self": {
    "href": "/api/cluster/licensing/licenses/cifs"
  }
  }
```

```
}
],
"num_records": 2,
"_links": {
"self": {
  "href": "/api/cluster/licensing/licenses/?fields=*&name=!base"
}
}
}
```

Retrieving a collection of unlicensed packages

By default, unlicensed packages are filtered from the collection output. This example shows how to use a query to retrieve unlicensed packages.

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"

# Response
200 OK

# JSON Body
{
"records": [
  {
    "name": "flexcache",
    "_links": {
      "self": {
        "href": "/api/cluster/licensing/licenses/flexcache"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"
  }
}
}
```

Installing a NLF license

This example installs a single NLFv1 license. A NLFv2 license installs using the same procedure.

> You must escape all the double quotes and backslash characters of the JSON license before it can be placed in the POST request.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "{\"statusResp\":{\"snStatus\": \"Active\", \"licenses\": {
\"package\": \"FabricPool\", \"capacity\": \"1\", \"licenseProtocol\":
\"FABRICPOOL-TB\", \"type\": \"capacity\", \"licenseScope\": \"cluster\"},
\"message\": \"Success\", \"statusCode\": \"S007\", \"version\": \"1\",
\"product\": \"fabricpool\", \"serialNumber\": \"4149027342\"},
\"Signature\":\"SignatureABC\"}" ]
}

# Response
201 Created
```

Installing a 28-character key

This example installs a single 28-character key formatted license.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "AAAAAAAAAAAAAAAAAAAAAAAAAAAA" ]
}

# Response
201 Created
```

Installing multiple licenses with one API call

This example shows how multiple keys can be provided to install multiple features in a single API call.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "AAAAAAAAAAAAAAAAAAAAAAAAAAAA",
           "BBBBBBBBBBBBBBBBBBBBBBBBBBBB" ]
}

# Response
201 Created
```

Retrieving information for a specific license package

This example shows how to retrieve information about the specific feature package `fabricpool`.

```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/licenses/fabricpool"

# Response
200 OK

# JSON Body
{
"name": "fabricpool",
"scope": "cluster",
"state": "compliant",
"description": "FabricPool License",
"licenses": [
{
  "owner": "testcluster-1",
  "serial_number": "123456789",
  "state": "compliant",
  "capacity": {
  "maximum_size": 109951162777600,
  "used_size": 0
  }
}
],
"_links": {
"self": {
  "href": "/api/cluster/licensing/licenses/fabricpool/"
}
}
}
```

Deleting a specific license

This example show how to delete a CIFS site license.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/cifs?serial_number=1-80-000011"

# JSON Body
{}

# Response
200 OK
```

Deleting with a query

The following example shows how to delete all NFS licenses specified with the '*' query.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/nfs?serial_number=*"

# JSON Body
{}

# Response
200 OK
```

Deleting all licenses installed with NLFv2

The following example shows how to delete all licenses installed by a NLFv2 formatted license.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses?licenses.installed_license=Core*Bundle&
serial_number=4149026-97-8"

# JSON Body
{
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses?licenses.installed_license=Core*Bundle&se
rial_number=4149026-97-8"
  }
}
}

# Response
200 OK
```

Retrieve license packages

GET `/cluster/licensing/licenses`

Introduced In: 9.6

Retrieves a collection of license packages.

By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages.
Note: Starting with ONTAP 9.11.1, the GET method no longer returns the Base license record.

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
scope	string	query	False	Filter by scope
state	string	query	False	Filter by state
entitlement.risk	string	query	False	Filter by entitlement.risk • Introduced in: 9.11
entitlement.action	string	query	False	Filter by entitlement.action • Introduced in: 9.11
licenses.installed_license	string	query	False	Filter by licenses.installed_license • Introduced in: 9.9
licenses.evaluation	boolean	query	False	Filter by licenses.evaluation
licenses.start_time	string	query	False	Filter by licenses.start_time
licenses.active	boolean	query	False	Filter by licenses.active

Name	Type	In	Required	Description
licenses.capacity.used_size	integer	query	False	Filter by licenses.capacity.used_size
licenses.capacity.maximum_size	integer	query	False	Filter by licenses.capacity.maximum_size
licenses.compliance.state	string	query	False	Filter by licenses.compliance.state
licenses.serial_number	string	query	False	Filter by licenses.serial_number
licenses.expiry_time	string	query	False	Filter by licenses.expiry_time
licenses.host_id	string	query	False	Filter by licenses.host_id • Introduced in: 9.9
licenses.owner	string	query	False	Filter by licenses.owner
licenses.shutdown_imminent	boolean	query	False	Filter by licenses.shutdown_imminent • Introduced in: 9.11
description	string	query	False	Filter by description • Introduced in: 9.11
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "description": "NFS License",
      "entitlement": {
        "action": "string",
        "risk": "string"
      },
      "licenses": [
        {
          "capacity": {
            "maximum_size": 0,
            "used_size": 0
          },
          "compliance": {
            "state": "compliant"
          },
          "expiry_time": "2019-03-02 14:00:00 -0500",
          "host_id": "456-44-1234",
          "installed_license": "Core Bundle",
          "owner": "cluster1",
          "serial_number": "123456789",
          "start_time": "2019-02-02 14:00:00 -0500"
        }
      ],
      "name": "NFS",
      "scope": "string",
      "state": "compliant"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

entitlement

Name	Type	Description
action	string	Entitlement action to be taken to mitigate the risk
risk	string	Entitlement risk of the package

capacity

Name	Type	Description
maximum_size	integer	Licensed capacity size (in bytes) that can be used.
used_size	integer	Capacity that is currently used (in bytes).

compliance

Name	Type	Description
state	string	Compliance state of the license.

licenses

Name	Type	Description
active	boolean	A flag indicating whether the license is currently being enforced.
capacity	capacity	
compliance	compliance	
evaluation	boolean	A flag indicating whether the license is in evaluation mode.
expiry_time	string	Date and time when the license expires.
host_id	string	A string that associates the license with a node or cluster.
installed_license	string	Name of license that enabled the feature.
owner	string	Cluster, node or license manager that owns the license.
serial_number	string	Serial number of the license.
shutdown_imminent	boolean	A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
start_time	string	Date and time when the license starts.

records

Name	Type	Description
_links	_links	
description	string	License description
entitlement	entitlement	
licenses	array[licenses]	Installed licenses of the package.

Name	Type	Description
name	string	Name of the license.
scope	string	Scope of the license.
state	string	Summary state of package based on all installed licenses.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Install one or more feature licenses

POST `/cluster/licensing/licenses`

Introduced In: 9.6

Installs one or more feature licenses.

Required properties

- `keys` - Array containing a list of NLF or 28-character license keys.

Related ONTAP commands

- `system license add`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
description	string	License description
entitlement	entitlement	
keys	array[string]	
licenses	array[licenses]	Installed licenses of the package.
name	string	Name of the license.
scope	string	Scope of the license.
state	string	Summary state of package based on all installed licenses.

Example request

```
{
  "description": "NFS License",
  "entitlement": {
    "action": "string",
    "risk": "string"
  },
  "keys": [
    "AMEPOSOIKLKGEEEEDGNDEKSJDEEE"
  ],
  "licenses": [
    {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 14:00:00 -0500",
      "host_id": "456-44-1234",
      "installed_license": "Core Bundle",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 14:00:00 -0500"
    }
  ],
  "name": "NFS",
  "scope": "string",
  "state": "compliant"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "description": "NFS License",
      "entitlement": {
        "action": "string",
        "risk": "string"
      },
      "keys": [
        "AMEPOSOIKLKGEEEEDGNDEKSJDEEE"
      ],
      "licenses": [
        {
          "capacity": {
            "maximum_size": 0,
            "used_size": 0
          },
          "compliance": {
            "state": "compliant"
          },
          "expiry_time": "2019-03-02 14:00:00 -0500",
          "host_id": "456-44-1234",
          "installed_license": "Core Bundle",
          "owner": "cluster1",
          "serial_number": "123456789",
          "start_time": "2019-02-02 14:00:00 -0500"
        }
      ],
      "name": "NFS",
      "scope": "string",
      "state": "compliant"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115117	Generic licensing error
1115122	No cluster serial number found
1115124	No node serial number found
1115130	No license code was provided
1115131	Installation of the license failed
1115132	License already exists on system
1115134	Serial number does not belong to node
1115141	License data is invalid
1115142	License signature is invalid
1115143	Internal error applying the requested license
1115152	License does not apply to the platform
1115154	Unable to retrieve cluster ID
1115155	Invalid cluster ID found
1115159	License is not in an acceptable format
1115160	License has already expired
1115164	Minimum ONTAP version requirements not met
1115165	Minimum ONTAP version requirements are not met for license type enabled
1115166	Minimum ONTAP version requirements are not met for license protocol SEC-COMP-BNDL-ENBLD
1115179	FlexCache is not supported on this system
1115180	FlexCache is not supported on cloud systems
1115407	Capacity pool licenses cannot be installed directly
1115427	License is incompatible with capacity pools licensing mode
1115562	One or more errors occurred when installing a NLFv2 license
1115563	Package details and serial number of license contained within the NLFv2 failure
1115564	Package cannot be deleted individually as it is part of a bundle

Error Code	Description
1115565	NLFv2 install failed as the license serial number is already in use
1115616	Package details and serial number of license included in the install conflict
1115617	NLFv2 license install failed with summary of conflicting licenses
1115618	NLFv2 license install failed as a license with newer timestamp already exists
5375355	The cluster has more nodes than are supported by All SAN Array.
5375366	The cluster has one or more nodes that do not support All SAN Array.
66846818	Failed to interpret FlexCache license information
66846821	FlexCache is not supported on cloud systems
66846822	Invalid FlexCache capacity information provided
655294464	Failed to extract license contents
655294465	License key is invalid
655294466	Serial number is invalid
655294467	Version number is invalid
655294468	Expired license
655294469	License does not apply to the platform
655294470	License does not apply to the product

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
errors	array[returned_error]	

Example error

```
{
  "errors": [
    {
      "arguments": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "code": "4",
      "message": "entry doesn't exist",
      "target": "uuid"
    }
  ]
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

entitlement

Name	Type	Description
action	string	Entitlement action to be taken to mitigate the risk
risk	string	Entitlement risk of the package

capacity

Name	Type	Description
maximum_size	integer	Licensed capacity size (in bytes) that can be used.
used_size	integer	Capacity that is currently used (in bytes).

compliance

Name	Type	Description
state	string	Compliance state of the license.

licenses

Name	Type	Description
active	boolean	A flag indicating whether the license is currently being enforced.
capacity	capacity	
compliance	compliance	
evaluation	boolean	A flag indicating whether the license is in evaluation mode.

Name	Type	Description
expiry_time	string	Date and time when the license expires.
host_id	string	A string that associates the license with a node or cluster.
installed_license	string	Name of license that enabled the feature.
owner	string	Cluster, node or license manager that owns the license.
serial_number	string	Serial number of the license.
shutdown_imminent	boolean	A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
start_time	string	Date and time when the license starts.

license_package

Name	Type	Description
description	string	License description
entitlement	entitlement	
keys	array[string]	
licenses	array[licenses]	Installed licenses of the package.
name	string	Name of the license.
scope	string	Scope of the license.
state	string	Summary state of package based on all installed licenses.

records

Name	Type	Description
description	string	License description
entitlement	entitlement	
keys	array[string]	
licenses	array[licenses]	Installed licenses of the package.
name	string	Name of the license.
scope	string	Scope of the license.
state	string	Summary state of package based on all installed licenses.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a license

DELETE `/cluster/licensing/licenses/{name}`

Introduced In: 9.6

Deletes a license.

Related ONTAP commands

- `system license delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Name of the license package to delete.
serial_number	string	query	True	Serial number of the license to delete.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
525028	Error during volume limit check, cannot remove license
525029	Current volume use will exceed limits if license is removed
1115137	Cluster license requires a base license to be installed
1115144	Cloud licenses cannot be deleted
1115178	A tier license that is still in use cannot be deleted
1115213	License is still in use and cannot be removed
1115406	Capacity pool licenses cannot be deleted
1115564	Package is part of a NLFv2 license and cannot be removed individually
66846823	A FlexCache license that is still in use cannot be deleted

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a license package

GET `/cluster/licensing/licenses/{name}`

Introduced In: 9.6

Retrieves a specific license package.

> By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages.

Related ONTAP commands

- `system license show`
- `system license show-status`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Name of the license package.
scope	string	query	False	Filter by scope
state	string	query	False	Filter by state
entitlement.risk	string	query	False	Filter by entitlement.risk • Introduced in: 9.11
entitlement.action	string	query	False	Filter by entitlement.action • Introduced in: 9.11
licenses.installed_license	string	query	False	Filter by licenses.installed_license • Introduced in: 9.9
licenses.evaluation	boolean	query	False	Filter by licenses.evaluation
licenses.start_time	string	query	False	Filter by licenses.start_time
licenses.active	boolean	query	False	Filter by licenses.active

Name	Type	In	Required	Description
licenses.capacity.used_size	integer	query	False	Filter by licenses.capacity.used_size
licenses.capacity.maximum_size	integer	query	False	Filter by licenses.capacity.maximum_size
licenses.compliance.state	string	query	False	Filter by licenses.compliance.state
licenses.serial_number	string	query	False	Filter by licenses.serial_number
licenses.expiry_time	string	query	False	Filter by licenses.expiry_time
licenses.host_id	string	query	False	Filter by licenses.host_id • Introduced in: 9.9
licenses.owner	string	query	False	Filter by licenses.owner
licenses.shutdown_imminent	boolean	query	False	Filter by licenses.shutdown_imminent • Introduced in: 9.11
description	string	query	False	Filter by description • Introduced in: 9.11
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
description	string	License description
entitlement	entitlement	
licenses	array[licenses]	Installed licenses of the package.
name	string	Name of the license.
scope	string	Scope of the license.
state	string	Summary state of package based on all installed licenses.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "NFS License",
  "entitlement": {
    "action": "string",
    "risk": "string"
  },
  "licenses": [
    {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 14:00:00 -0500",
      "host_id": "456-44-1234",
      "installed_license": "Core Bundle",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 14:00:00 -0500"
    }
  ],
  "name": "NFS",
  "scope": "string",
  "state": "compliant"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

entitlement

Name	Type	Description
action	string	Entitlement action to be taken to mitigate the risk
risk	string	Entitlement risk of the package

capacity

Name	Type	Description
maximum_size	integer	Licensed capacity size (in bytes) that can be used.
used_size	integer	Capacity that is currently used (in bytes).

compliance

Name	Type	Description
state	string	Compliance state of the license.

licenses

Name	Type	Description
active	boolean	A flag indicating whether the license is currently being enforced.
capacity	capacity	
compliance	compliance	

Name	Type	Description
evaluation	boolean	A flag indicating whether the license is in evaluation mode.
expiry_time	string	Date and time when the license expires.
host_id	string	A string that associates the license with a node or cluster.
installed_license	string	Name of license that enabled the feature.
owner	string	Cluster, node or license manager that owns the license.
serial_number	string	Serial number of the license.
shutdown_imminent	boolean	A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
start_time	string	Date and time when the license starts.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage the BlueXP cloud service

Cluster mediator-ping endpoint overview

Overview

You can use this API to ping the BlueXP cloud service. The POST operation retrieves the details about service reachability, configurability, and ping latency.

Performing a ping operation

You can perform a ping operation by issuing a POST request on /cluster/mediator-ping. Parameters are provided in the body of the POST request. There is only one required parameter.

Required configuration fields

These fields are always required for any POST /cluster/mediator-ping request.

- `type` - Specifies the type of the mediator.

Examples

POST request body for a ping to the BlueXP cloud service.

```
# API
/api/cluster/mediator-ping
```

POST request body from a file

```
ping_post_body.txt:
{
"type": "cloud"
}
curl -X POST https://<mgmt-ip>/api/cluster/mediator-ping -d
"@ping_post_body.txt"
```

Inline POST request body

```
curl -X POST https://<mgmt-ip>/api/cluste/mediator-ping -d
'{"type":"cloud"}'
```

POST request response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Mon, 03 Mar 2025 16:40:20 GMT
Server: libzapid-httpd
Vary: Accept-Encoding,Origin
Content-Length: 69
Content-Type: application/hal+json
Client-Date: Mon, 03 Mar 2025 16:40:20 GMT
Client-Peer: 10.235.144.44:80
Client-Response-Num: 1
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
X-Content-Type-Options: nosniff
{
"reachable": true,
"latency_ms": 50,
"configurable": true,
"high_latency": false,
"proxy_configured": true,
"proxy_used": true,
"timeout_occurred": false
}
```

Ping the BlueXP cloud service

POST `/cluster/mediator-ping`

Introduced In: 9.17

Pings BlueXP cloud service.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
configurable	boolean	Indicates if the BlueXP cloud mediator is configurable. This depends on whether the ping latency is within a threshold.
high_latency	boolean	Indicates if the ping latency of the BlueXP cloud server is greater than a threshold.
latency_ms	integer	Ping latency in milliseconds.
proxy_configured	boolean	Indicates if the HTTP proxy is configured on the cluster for the REST API calls to the BlueXP cloud server.
proxy_used	boolean	Indicates if the HTTP proxy is used for the ping to the BlueXP cloud server.
reachable	boolean	Ping status of the BlueXP cloud service.
timeout_occurred	boolean	Indicates if the ping to the BlueXP cloud server failed due to a timeout.
type	string	Mediator type.

Example request

```
{
  "configurable": 1,
  "high_latency": "",
  "latency_ms": 150,
  "proxy_configured": 1,
  "proxy_used": 1,
  "reachable": 1,
  "timeout_occurred": "",
  "type": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
configurable	boolean	Indicates if the BlueXP cloud mediator is configurable. This depends on whether the ping latency is within a threshold.
high_latency	boolean	Indicates if the ping latency of the BlueXP cloud server is greater than a threshold.
latency_ms	integer	Ping latency in milliseconds.
proxy_configured	boolean	Indicates if the HTTP proxy is configured on the cluster for the REST API calls to the BlueXP cloud server.
proxy_used	boolean	Indicates if the HTTP proxy is used for the ping to the BlueXP cloud server.
reachable	boolean	Ping status of the BlueXP cloud service.
timeout_occurred	boolean	Indicates if the ping to the BlueXP cloud server failed due to a timeout.

Name	Type	Description
type	string	Mediator type.

Example response

```
{
  "configurable": 1,
  "high_latency": "",
  "latency_ms": 150,
  "proxy_configured": 1,
  "proxy_used": 1,
  "reachable": 1,
  "timeout_occurred": "",
  "type": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13369414	Failed to talk to the BlueXP cloud service. Check the need for an HTTP proxy and network settings like firewall.
13369417	Failed to check if an HTTP proxy is configured on the cluster.

Name	Type	Description
configurable	boolean	Indicates if the BlueXP cloud mediator is configurable. This depends on whether the ping latency is within a threshold.
error	error	
reachable	boolean	Ping status of the BlueXP cloud service.

Example error

```
{
  "configurable": "",
  "error": {
    "message": "string"
  },
  "reachable": ""
}
```

Definitions

See Definitions

mediator_ping

BlueXP cloud service ping API.

Name	Type	Description
configurable	boolean	Indicates if the BlueXP cloud mediator is configurable. This depends on whether the ping latency is within a threshold.
high_latency	boolean	Indicates if the ping latency of the BlueXP cloud server is greater than a threshold.
latency_ms	integer	Ping latency in milliseconds.
proxy_configured	boolean	Indicates if the HTTP proxy is configured on the cluster for the REST API calls to the BlueXP cloud server.
proxy_used	boolean	Indicates if the HTTP proxy is used for the ping to the BlueXP cloud server.
reachable	boolean	Ping status of the BlueXP cloud service.
timeout_occurred	boolean	Indicates if the ping to the BlueXP cloud server failed due to a timeout.
type	string	Mediator type.

error

Name	Type	Description
code	integer	Error code.
message	string	Error message string.

Manage cluster mediators

Cluster mediators endpoint overview

Overview

You can use this API to add, modify or remove a mediator in a MetroCluster IP configuration or a SnapMirror active sync configuration. You can also use this API to get the status and details of the existing mediator. The GET operation returns the status of the mediator along with the mediator details. The DELETE operation removes the mediator. The POST operation adds the mediator. The PATCH operation modifies the local and remote proxy options.
SnapMirror active sync supports two types of mediators:

1. **ONTAP Mediator:** This is the traditional mediator used in SnapMirror active sync, and is hosted on-premises. It requires deployment at a third, neutral site.
2. **ONTAP cloud mediator:** This mediator is hosted in BlueXP SaaS and is primarily designed for SnapMirror active sync. It eliminates the need for a third site and provides enhanced scalability and availability.

Adding a mediator

A mediator can be added by issuing a POST request on /cluster/mediators. Parameters are provided in the body of the POST request. There are no optional parameters for adding a mediator to a MetroCluster IP configuration.

Required configuration fields (MetroCluster)

These fields are always required for any POST /cluster/mediators request.

- `ip_address` - Specifies the IP address of the mediator.
- `user` - Specifies a user name credential.
- `password` - Specifies a password credential.

Required configuration fields (SnapMirror active sync: ONTAP Mediator, ONTAP cloud mediator)

These fields are required for any POST /cluster/mediators request.

- `type` - (defaults to "on-prem" if omitted) Specifies the type of mediator. For the ONTAP Mediator, the value of type has to be "on-prem". For the ONTAP cloud mediator, the value of type has to be "cloud".
- `peer_cluster.name` - Specifies the name of the peer cluster.
- `ip_address` - (only applicable to the ONTAP Mediator) Specifies the IP address of the mediator.
- `user` - (only applicable to the ONTAP Mediator) Specifies the user name credential.
- `password` - (only applicable to the ONTAP Mediator) Specifies a password credential.
- `ca_certificate` - (optional if the certificate is already installed, only applicable to the ONTAP Mediator) Specifies the CA certificate for the ONTAP Mediator.
- `bluexp_org_id` - (only applicable to the ONTAP cloud mediator) Specifies the BlueXP organization ID.
- `service_account_client_id` - (only applicable to the ONTAP cloud mediator) Specifies the client ID of the service account.
- `service_account_client_secret` - (only applicable to the ONTAP cloud mediator) Specifies the client secret of the service account.

- `bluexp_account_token` - (only applicable to the ONTAP cloud mediator) Specifies the BlueXP service account token. This field is mutually exclusive with the `service_account_client_id` and `service_account_client_secret` pair, meaning either the token or the client-id and client-secret pair is allowed.
- `use_http_proxy_local` - (optional, defaults to false if omitted, only applicable for ONTAP cloud mediator) Specifies if a HTTP proxy should be used on the ONTAP cluster.
- `use_http_proxy_remote` - (optional, defaults to false if omitted, only applicable for ONTAP cloud mediator) Specifies if a HTTP proxy should be used on the peer ONTAP cluster.
- `strict_cert_validation` - (optional, defaults to false if omitted, only applicable for ONTAP cloud mediator) Specifies if strict validation of certificates is performed while making REST API calls to the ONTAP Cloud Mediator.

Polling the setup job

After a successful POST /cluster/mediators is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The setup job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Deleting a mediator

A mediator can be deleted by issuing a DELETE to /cluster/mediators/{uuid}. Parameters are provided in the body of the DELETE request. There are no optional parameters for deleting a mediator in a MetroCluster IP configuration.

Required configuration fields (MetroCluster)

These fields are always required for any DELETE /cluster/mediators/{uuid} request.

- `user` - Specifies a user name credential.
- `password` - Specifies a password credential.

Required configuration fields (SnapMirror active sync: ONTAP Mediator, ONTAP cloud mediator)

No fields are required in the body of the DELETE /cluster/mediators/{uuid} request for a mediator in SnapMirror active sync configuration.

Polling the delete job

After a successful DELETE /cluster/mediators/{uuid} is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The delete job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Modify a mediator

An ONTAP cloud mediator can be modified by issuing a PATCH to /cluster/mediators/{uuid}. Parameters are provided in the body of the PATCH request. Currently there are only 2 parameters which can be modified.

Fields which can be modified

These fields can be modified by any PATCH /cluster/mediators/{uuid} request.

- `use-http-proxy-local` - Specifies if the local cluster should use http-proxy server while making REST API calls to mediator.
- `use-http-proxy-remote` - Specifies if the remote cluster should use http-proxy while making REST API calls to mediator.

Polling the modify job

After a successful PATCH /cluster/mediators/{uuid} is issued, an HTTP status code of 202 (Accepted) is returned along with a link in the body of the response. The modify response can be monitored by using the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Setting up a mediator for a four-node MetroCluster and a SnapMirror active sync configuration

This example shows the POST body when setting up a mediator for a four-node MetroCluster IP configuration and a SnapMirror active sync configuration. For MetroCluster, the only prerequisite is that MetroCluster IP is configured.

```
# API
/api/cluster/mediators
```

POST body included from file (MetroCluster)

```
mediator_post_body.txt:
{
"ip_address": "1.1.1.1",
"user": "username",
"password": "password"
}
curl -X POST https://<mgmt-ip>/api/cluster/mediators -d
"@mediator_post_body.txt"
```

POST body included from file (SnapMirror active sync: ONTAP Mediator)

```
mediator_post_body.txt:
{
"peer_cluster.name": "C2_sti230-vsim-sr092w_cluster",
"ip_address": "172.18.48.61",
"user": "username",
"password": "password"
}
curl -X POST https://<mgmt-ip>/api/cluster/mediators -d
"@mediator_post_body.txt"
```

POST body included from file (SnapMirror active sync: ONTAP cloud mediator)

```
mediator_post_body.txt:
{
"peer_cluster.name": "C2_sti230-vsim-sr092w_cluster",
"type": "cloud",
"bluexp_org_id":"your-bluexp-org-id",
"service_account_client_id":"your-account-client-id",
"service_account_client_secret":"your-account-client-secret",
"use_http_proxy_local":"true",
"use_http_proxy_remote":"true",
"strict_cert_validation":"true"
}
curl -X POST https://<mgmt-ip>/api/cluster/mediators -d
"@mediator_post_body.txt"
```

Inline POST body (MetroCluster)

```
curl -X POST https://<mgmt-ip>/api/cluster/mediators -H "Content-Type:
application/hal+json" -d '{"ip_address": "1.1.1.1", "user": "username",
"password": "password"}'
```

Inline POST body (SnapMirror active sync: ONTAP Mediator)

```
curl -X POST https://<mgmt-ip>/api/cluster/mediators -H "Content-Type:
application/hal+json" -d '{"peer_cluster.name": "C2_sti230-vsim-
sr092w_cluster", "ip_address": "172.18.48.61", "user": "username",
"password": "password"}'
```

Inline POST body (SnapMirror active sync: ONTAP cloud mediator)

```
curl -X POST https://<mgmt-ip>/api/cluster/mediators -H "Content-Type:
application/hal+json" -d '{"peer_cluster.name": "C2_sti230-vsim-
sr092w_cluster", "type": "cloud", "bluexp_org_id": "your-bluexp-org-id",
"service_account_client_id": "your-account-client-id",
"service_account_client_secret": "your-account-client-secret",
"use_http_proxy_local": "true", "use_http_proxy_remote": "true",
"strict_cert_validation": "true"}'
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:40:59 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the mediator setup job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f567b48b-fca6-11ea-acaf-
005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:41:29 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
"uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
"description": "POST /api/cluster/mediators/",
"state": "running",
"start_time": "2020-09-22T03:41:00-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
  }
}
}
```

Final status of a successful Mediator add

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:43:38 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 358
Content-Type: application/hal+json
{
"uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
"description": "POST /api/cluster/mediators/",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-09-22T03:41:00-04:00",
"end_time": "2020-09-22T03:42:10-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
  }
}
}
```

Retrieving the existing mediator configurations

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/mediators
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 08:53:18 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 320
Content-Type: application/hal+json
{
"records": [
  {
    "uuid": "f89e8906-fca6-11ea-acaf-005056bb47c1",
    "_links": {
      "self": {
        "href": "/api/cluster/mediators/f89e8906-fca6-11ea-acaf-
005056bb47c1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/cluster/mediators"
  }
}
}
```

Retrieving a specific mediator using the UUID

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/mediators/f89e8906-fca6-11ea-
acaf-005056bb47c1
```

Response (MetroCluster)

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 08:59:40 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 347
Content-Type: application/hal+json
{
"uuid": "f89e8906-fca6-11ea-acaf-005056bb47c1",
"ip_address": "10.234.173.40",
"port": 31784,
"reachable": true,
"peer_cluster": {
  "name": "mcc_siteB",
  "uuid": "38779fd1-fc6b-11ea-9421-005056bb21d8"
},
"peer_mediator_connectivity": "connected",
"strict_cert_validation": "true",
"_links": {
  "self": {
    "href": "/api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1"
  }
}
}
```

Response (SnapMirror active sync: ONTAP Mediator)

```
{
"uuid": "cc44f61f-ffd5-11ef-aaa6-005056ae32ff",
"ip_address": "172.18.48.61",
"port": 31784,
"reachable": true,
"peer_cluster": {
  "name": "C2_sti232-vsim-sr089o_cluster",
  "uuid": "ece8d7c6-fd8f-11ef-b8b3-005056aec21e"
},
"peer_mediator_connectivity": "connected",
"local_mediator_connectivity": "connected",
"type": "on_prem",
"_links": {
  "self": {
    "href": "/api/cluster/mediators/cc44f61f-ffd5-11ef-aaa6-005056ae32ff"
  }
}
}
```


Response (SnapMirror active sync: ONTAP cloud mediator)


```
{
"uuid": "b9ba4e5b-ff14-11ef-82a4-005056ae1bc8",
"ip_address": "0.0.0.0",
"reachable": true,
"peer_cluster": {
  "name": "C2_sti232-vsim-sr089o_cluster",
  "uuid": "ece8d7c6-fd8f-11ef-b8b3-005056aec21e"
},
"peer_mediator_connectivity": "connected",
"local_mediator_connectivity": "connected",
"use_http_proxy_local": true,
"use_http_proxy_remote": true,
"type": "cloud",
"_links": {
  "self": {
    "href": "/api/cluster/mediators/b9ba4e5b-ff14-11ef-82a4-005056ae1bc8"
  }
}
}
```


Deleting a configured mediator using the UUID (MetroCluster)

Request

```
curl -X DELETE https://<mgmt-ip>/api/cluster/mediators/{uuid} -H "Content-
Type: application+hal/json" -d '{"user": "username", "password":
"password"}'
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:13:52 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
    }
  }
}
}
```

Deleting a configured mediator using the UUID (SnapMirror active sync: ONTAP Mediator, ONTAP cloud mediator)

Request

```
curl -X DELETE https://<mgmt-ip>/api/cluster/mediators/{uuid} -H "Content-
Type: application+hal/json"
```

Response

```
{
"job": {
  "uuid": "0661a77a-ff16-11ef-82a4-005056ae1bc8",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/0661a77a-ff16-11ef-82a4-005056ae1bc8"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the DELETE request to fetch information for the delete job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-
005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:14:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 316
Content-Type: application/hal+json
{
"uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
"description": "DELETE /api/cluster/mediators/f89e8906-fca6-11ea-acaf-
005056bb47c1",
"state": "running",
"start_time": "2020-09-22T05:13:52-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
  }
}
}
```

Final status of the Mediator DELETE job

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:21:46 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 396
Content-Type: application/hal+json
{
"uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
"description": "DELETE /api/cluster/mediators/f89e8906-fca6-11ea-acaf-
005056bb47c1",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-09-22T05:13:52-04:00",
"end_time": "2020-09-22T05:14:24-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
  }
}
}
```

Modifying a configured Mediator using the uuid

Request

```
curl -X PATCH https://<mgmt-ip>/api/cluster/mediators/{uuid} -H "Content-
Type: application+hal/json" -d '{"use_http_proxy_local":"true",
"use_http_proxy_remote":"true", "strict_cert_validation": "true"}'
```

Response

```
HTTP/1.1 202 Accepted
Date: Thu, 06 Mar 2025 10:10:10 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "3016e8e9-fa73-11ef-9d41-005056ae10ae",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3016e8e9-fa73-11ef-9d41-005056ae10ae"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the PATCH request to fetch information for the modify job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/3016e8e9-fa73-11ef-9d41-
005056ae10ae
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Thu, 06 Mar 2025 10:10:22 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 395
Content-Type: application/hal+json
{
"uuid": "3016e8e9-fa73-11ef-9d41-005056ae10ae",
"description": "PATCH /api/cluster/mediators/a9a812bf-f7f8-11ef-a923-
005056ae10ae",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2025-03-06T05:10:10-05:00",
"end_time": "2025-03-06T05:10:10-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/3016e8e9-fa73-11ef-9d41-005056ae10ae"
  }
}
}
```

Retrieve ONTAP Mediators configured in the cluster

GET `/cluster/mediators`

Introduced In: 9.8

"Retrieves a Mediator configured in the cluster."

Related ONTAP commands

- `storage iscsi-initiator show`

Parameters

Name	Type	In	Required	Description
type	string	query	False	Filter by type • Introduced in: 9.17
peer_cluster.name	string	query	False	Filter by peer_cluster.name

Name	Type	In	Required	Description
peer_cluster.uuid	string	query	False	Filter by peer_cluster.uuid
local_mediator_connectivity	string	query	False	Filter by local_mediator_connectivity • Introduced in: 9.17
use_http_proxy_local	boolean	query	False	Filter by use_http_proxy_local • Introduced in: 9.17
uuid	string	query	False	Filter by uuid
port	integer	query	False	Filter by port
reachable	boolean	query	False	Filter by reachable
strict_cert_validation	boolean	query	False	Filter by strict_cert_validation • Introduced in: 9.17
peer_mediator_connectivity	string	query	False	Filter by peer_mediator_connectivity • Introduced in: 9.10
ip_address	string	query	False	Filter by ip_address
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "dr_group": {
        "id": 0
      },
      "ip_address": "10.10.10.7",
      "local_mediator_connectivity": "connected",
      "peer_cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster2",
        "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
      },
      "peer_mediator_connectivity": "connected",
      "port": 31784,
      "reachable": 1,
      "strict_cert_validation": 1,
      "type": "string",
      "use_http_proxy_local": 1,
      "use_http_proxy_remote": 1,
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
2430739	Unable to access Mediator. Reason: Invalid Mediator IP or Mediator does not exist.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

_links

Name	Type	Description
self	href	

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

records

Mediator information

Name	Type	Description
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.

Name	Type	Description
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
uuid	string	The unique identifier for the mediator service.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create and connect an ONTAP Mediator

POST `/cluster/mediators`

Introduced In: 9.8

Creates and connect a mediator.

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
bluexp_account_token	string	BlueXP account token. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
bluexp_org_id	string	BlueXP organization ID. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
ca_certificate	string	CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
password	string	The password used to connect to the REST server on the mediator.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.

Name	Type	Description
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.
service_account_client_id	string	Client ID of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
service_account_client_secret	string	Client secret token of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
user	string	The username used to connect to the REST server on the mediator.
uuid	string	The unique identifier for the mediator service.

Example request

```
{
  "bluexp_account_token": "string",
  "bluexp_org_id": "string",
  "ca_certificate": "string",
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "local_mediator_connectivity": "connected",
  "password": "mypassword",
  "peer_cluster": {
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "service_account_client_id": "string",
  "service_account_client_secret": "string",
  "strict_cert_validation": 1,
  "type": "string",
  "use_http_proxy_local": 1,
  "use_http_proxy_remote": 1,
  "user": "myusername",
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13369351	Update to mediator failed. Reason: does not authorized for that command. Check that the peer cluster and mediator are reachable.
2430758	Mediator cannot be added. Reason: Some of the nodes in the cluster have incorrect MetroCluster IP configuration.
2430734	Unable to add Mediator. Reason : Authentication failed.
2430774	Failed to add Mediator. Reason : Node is not reachable or does not exist.
2432871	Failed to add Mediator. Reason : Some of the parameters in the request is invalid.

Definitions

See Definitions

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

href

Name	Type	Description
href	string	

_links

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
bluexp_account_token	string	BlueXP account token. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
bluexp_org_id	string	BlueXP organization ID. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true

Name	Type	Description
ca_certificate	string	CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
password	string	The password used to connect to the REST server on the mediator.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.

Name	Type	Description
service_account_client_id	string	Client ID of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
service_account_client_secret	string	Client secret token of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
user	string	The username used to connect to the REST server on the mediator.
uuid	string	The unique identifier for the mediator service.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an ONTAP Mediator

DELETE `/cluster/mediators/{uuid}`

Introduced In: 9.8

Deletes the mediator.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
bluexp_account_token	string	BlueXP account token. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true

Name	Type	Description
bluexp_org_id	string	BlueXP organization ID. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
ca_certificate	string	CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
password	string	The password used to connect to the REST server on the mediator.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.

Name	Type	Description
service_account_client_id	string	Client ID of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
service_account_client_secret	string	Client secret token of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
user	string	The username used to connect to the REST server on the mediator.
uuid	string	The unique identifier for the mediator service.

Example request

```
{
  "bluexp_account_token": "string",
  "bluexp_org_id": "string",
  "ca_certificate": "string",
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "local_mediator_connectivity": "connected",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "service_account_client_id": "string",
  "service_account_client_secret": "string",
  "strict_cert_validation": 1,
  "type": "string",
  "use_http_proxy_local": 1,
  "use_http_proxy_remote": 1,
  "user": "myusername",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13369377	Mediator field "mediator.id" does not exist.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
bluexp_account_token	string	BlueXP account token. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true

Name	Type	Description
bluexp_org_id	string	BlueXP organization ID. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
ca_certificate	string	CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
password	string	The password used to connect to the REST server on the mediator.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.

Name	Type	Description
service_account_client_id	string	Client ID of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
service_account_client_secret	string	Client secret token of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
user	string	The username used to connect to the REST server on the mediator.
uuid	string	The unique identifier for the mediator service.

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the ONTAP Mediator state and configuration

GET `/cluster/mediators/{uuid}`

Introduced In: 9.8

"Retrieves the Mediator state and configuration."

Related ONTAP commands

- `storage iscsi-initiator show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
dr_group	dr_group	DR group reference.

Name	Type	Description
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
uuid	string	The unique identifier for the mediator service.

Example response


```
{
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "local_mediator_connectivity": "connected",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "strict_cert_validation": 1,
  "type": "string",
  "use_http_proxy_local": 1,
  "use_http_proxy_remote": 1,
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Modify the mediator configuration

PATCH `/cluster/mediators/{uuid}`

Introduced In: 9.17

Modifies the mediator configuration.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
dr_group	dr_group	DR group reference.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.

Name	Type	Description
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
reachable	boolean	Indicates the connectivity status of the mediator.
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true

Name	Type	Description
uuid	string	The unique identifier for the mediator service.

Example request

```
{
  "dr_group": {
    "id": 0
  },
  "local_mediator_connectivity": "connected",
  "peer_mediator_connectivity": "connected",
  "reachable": 1,
  "strict_cert_validation": 1,
  "use_http_proxy_local": 1,
  "use_http_proxy_remote": 1,
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13369377	Mediator field "mediator.id" does not exist.
13369412	Modification of the mediator configuration succeeded on the peer cluster but failed on the local cluster. Reason : {Reason of failure}. Wait a few minutes, then try the operation again.
13369421	Failed to modify mediator configuration on the cluster. Reason : {Reason of failure}. Wait a few minutes, then try the operation again.

Definitions

See Definitions

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

href

Name	Type	Description
href	string	

_links

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
dr_group	dr_group	DR group reference.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.

Name	Type	Description
reachable	boolean	Indicates the connectivity status of the mediator.
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
uuid	string	The unique identifier for the mediator service.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the cluster

GET `/cluster/metrics`

Introduced In: 9.6

Retrieves historical performance metrics for the cluster.

Parameters

Name	Type	In	Required	Description
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
timestamp	string	query	False	Filter by timestamp
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
status	string	query	False	Filter by status
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, or 1y. The period for each time range is specified as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and manage MetroCluster configurations

Cluster MetroCluster endpoint overview

Overview

You can use this API to create, perform operations, and retrieve relevant information pertaining to MetroCluster. The GET operation fetches MetroCluster status and configuration parameters for the local and partner cluster. The PATCH operation executes a switchover, heal or switchback operation. The POST request can be used to setup a MetroCluster.

Creating a MetroCluster

A new MetroCluster can be set up by issuing a POST to /cluster/metrocluster. Parameters are provided in the body of the POST request.

Fields used for setting up a MetroCluster configuration

The fields used for MetroCluster APIs are either required or optional and are described as follows:

Required configuration fields

These fields are always required for any POST /cluster/metrocluster request.

- `partner_cluster.name` - Specifies the partner cluster name to which cluster peering has been established.
- `dr_pairs` - Specifies local and DR partner node pairs. Each pair uniquely identifies a DR group.

Optional configuration fields

This field is used to set up additional components in a MetroCluster configuration.

- `mediator.*` - Specifies mediator parameters. If Mediator Assisted Unplanned Switchover (MAUSO) functionality is required, then a mediator should be configured.
- `mccip_ports` - Specifies relevant layer 3 network configuration information for each port. These include port name, node name, IP address, gateway, and netmask. If mccip_ports is not provided, then the API automatically generates IP addresses for the ports and creates a layer 2 network configuration.

Polling the setup job

After a successful POST /cluster/metrocluster is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The setup job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Setting up a 4-node MetroCluster

```
This example shows the POST body when setting up a 4-node MetroCluster
along with a mediator. It is required that cluster peering be established
between two clusters, in this example, site "mcc_siteA" and "mcc_siteB"
before issuing the POST request. Nodes "node-a" and "node-b" are HA
partners and part of the local cluster "mcc_siteA", wheres nodes "node-c"
and "node-d" are HA partners in the partner cluster  "mcc_siteB".
Specifying a single DR pairing of "node-a" and "node-c" is sufficient to
identify a DR group -- "node-a" and "node-c" will be designated primary DR
partners ("node-b" and "node-d" too). "node-d" will then be designated
auxiliary partner of "node-a". Once the MetroCluster configuration has
been completed, and since mediator parameters have been provided, the
mediator will be setup and MAUSO enabled.

# API
/api/cluster/metrocluster
```

POST body included from file

```
mcc_post_body.txt:
{
"partner_cluster" : {
  "name": "mcc_siteB"
},
"dr_pairs" : [
  {
    "node" : {
      "name" : "node-a"
    },
    "partner" : {
      "name" : "node-c"
    }
  }
],
"mediator" :  {
  "ip_address" : "1.2.3.4",
  "user" : "mcc_mediator",
  "password" : "openMediator"
}
}
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
"@mcc_post_body.txt"
```

Inline POST body

```
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
'{"partner_cluster" : {"name": "mcc_siteB" }, "dr_pairs" : [{"node" :
{"name" : "node-a" }, "partner" : {"name" : "node-c" }}], "mediator" :
{"ip_address" : "1.2.3.4", "user" : "mcc_mediator" , "password" :
"openMediator" }}'
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Thu, 09 Jan 2020 20:38:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "f23abbdb-331f-11ea-acd3-005056a708b2",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abbdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the setup job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f23abbdb-331f-11ea-acd3-
005056a708b2
```

Job status response

The following is an example of the job status response returned by the running MetroCluster setup job:

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:40:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
"uuid": "f23abbdb-331f-11ea-acd3-005056a708b2",
"description": "POST /api/cluster/metrocluster",
"state": "running",
"message": "Checking remote storage pool",
"code": 2432844,
"start_time": "2020-01-09T15:38:08-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f23abbdb-331f-11ea-acd3-005056a708b2"
  }
}
```

Completion message

This is the final update message from the setup job indicating completion.

```
{
"uuid": "f23abbdb-331f-11ea-acd3-005056a708b2",
"description": "POST /api/cluster/metrocluster",
"state": "running",
"message": "MetroCluster setup is complete",
"code": 2432849,
"start_time": "2020-01-09T15:38:08-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f23abbdb-331f-11ea-acd3-005056a708b2"
  }
}
}
```

Final status of a successful MetroCluster setup workflow

When the setup job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report the final status.

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:43:54 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 360
Content-Type: application/hal+json
{
"uuid": "f23abbdb-331f-11ea-acd3-005056a708b2",
"description": "POST /api/cluster/metrocluster",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-01-09T15:38:08-05:00",
"end_time": "2020-01-09T15:43:50-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f23abbdb-331f-11ea-acd3-005056a708b2"
  }
}
}
```

Retrieving the MetroCluster configuration after completion of the POST request

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster
```

Response

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:49:40 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 849
Content-Type: application/hal+json
{
"local": {
  "configuration_state": "configured",
  "periodic_check_enabled": true,
  "mode": "normal",
  "partner_cluster_reachable": true,
  "cluster": {
    "name": "mcc_siteA",
    "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
    "_links": {
      "self": {
        "href": "/api/cluster"
      }
    }
  }
},
"remote": {
  "configuration_state": "configured",
  "periodic_check_enabled": true,
  "mode": "normal",
  "cluster": {
    "name": "mcc_siteB",
    "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-
005056a7dc84/cluster"
      }
    }
  }
},
"configuration_type": "ip_fabric",
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster"
  }
}
}
```

Retrieving information about the nodes in a MetroCluster configuration

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
```

Response

```
HTTP/1.1 200 OK
Date: Fri, 10 Jan 2020 02:26:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Transfer-Encoding: chunked
{
"records": [
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteA",
      "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster"
        }
      }
    },
    "node": {
      "name": "node-a",
      "uuid": "1e6b0137-30dd-11ea-82ba-005056a7c78a",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/1e6b0137-30dd-11ea-82ba-
005056a7c78a"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/1e6b0137-30dd-11ea-82ba-
005056a7c78a"
      }
    }
  },
```

```
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteA",
      "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster"
        }
      }
    },
    "node": {
      "name": "node-b",
      "uuid": "1e57ba22-30dd-11ea-8b19-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/1e57ba22-30dd-11ea-8b19-
005056a708b2"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/1e57ba22-30dd-11ea-8b19-
005056a708b2"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteB",
      "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-
005056a7dc84/cluster"
        }
      }
    },
    "node": {
      "name": "node-c",
      "uuid": "1e563efc-30dd-11ea-a9d3-005056a71573",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/1e563efc-30dd-11ea-a9d3-
```

```
005056a71573"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/1e563efc-30dd-11ea-a9d3-
005056a71573"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteB",
      "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-
005056a7dc84/cluster"
        }
      }
    },
    "node": {
      "name": "node-d",
      "uuid": "1e400aa4-30dd-11ea-adec-005056a7dc84",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/1e400aa4-30dd-11ea-adec-
005056a7dc84"
        }
      }
    },
    "encryption_enabled": false,
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/1e400aa4-30dd-11ea-adec-
005056a7dc84"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/nodes"
```

```
  }
}
}
```

Retrieving MetroCluster status and configuration information

```
GET https://<mgmt-ip>/api/cluster/metrocluster
{
  "local": {
      "configuration_state": "configured",
      "periodic_check_enabled": true,
      "mode": "normal",
      "cluster": {
          "name": "cluster1",
          "uuid": "bbc00ca3-8d81-11e9-b5a9-005056826931",
          "_links": {
              "self": {
                  "href": "/api/cluster"
              }
          }
      }
  },
  "remote": {
      "configuration_state": "configured",
      "periodic_check_enabled": true,
      "mode": "normal",
      "cluster": {
          "name": "cluster3",
          "uuid": "ce2cf803-8d81-11e9-87db-00505682cecf",
          "_links": {
              "self": {
                  "href": "/api/cluster/peers/ce2cf803-8d81-11e9-87db-
00505682cecf/cluster"
              }
          }
      }
  },
  "_links": {
      "self": {
          "href": "/api/cluster/metrocluster"
      }
  }
}
```

Initiating a switchover, heal or switchback command using PATCH

PATCH is used to initiate a variety of operations by specifying one of the following values in the "action" parameter:

- `switchover` - Initiates an Unplanned Switchover (USO).
- `negotiated_switchover` - Indicates that an Negotiated switchover (NSO) is to be performed.
- `negotiated_switchover_simulate` - Provides validation in preparation for NSO but does not perform the operation.
- `switchback` - Indicates that a switchback is to be performed.
- `switchback_simulate` - Provides validation for switchback but does not commit the operation.
- `heal_aggregates` - Indicates that the aggregates phase of the heal operation is to be performed.
- `heal_root_aggregates` - Indicates that the root aggregates phase of the heal operation is to be performed.

PATCH Switchover example

```
PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchover
{
  "job": {
      "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
      "_links": {
          "self": {
              "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-
005056820b99"
          }
      }
  }
}
```

This returns a job UUID. A subsequent GET for this job should return the following:

```
GET https://<mgmt-ip>/api/cluster/jobs/70e54274-57ee-11e9-aa33-
005056820b99
{
  "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchover Job",
  "state": "success",
  "message": "Complete: Switchover is successful.",
  "code": 0,
  "start_time": "2019-04-05T15:02:02-07:00",
  "end_time": "2019-04-05T15:02:30-07:00",
  "_links": {
      "self": {
          "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99"
      }
  }
}
```

PATCH Switchback example:

```
PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchback
{
  "job": {
      "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
      "_links": {
          "self": {
              "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-
005056820b99"
          }
      }
  }
}
```

This returns a job UUID with a link to the job. A subsequent GET for this job UUID can be used to retrieve the completion status of the operation:

```
GET https://<mgmt-ip>/api/cluster/jobs/a62714cc-57ec-11e9-aa33-
005056820b99
{
  "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchback Job",
  "state": "success",
  "message": "Complete: Switchback is successful.",
  "code": 0,
  "start_time": "2019-04-05T14:49:12-07:00",
  "end_time": "2019-04-05T14:50:12-07:00",
  "_links": {
      "self": {
          "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-005056820b99"
      }
  }
}
```

Retrieve MetroCluster status and configuration details

GET `/cluster/metrocluster`

Introduced In: 9.8

Retrieves MetroCluster status and configuration details.

Related ONTAP commands

- `metrocluster show`
- `metrocluster node show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	

Name	Type	Description
configuration_type	string	Displays the MetroCluster configuration type.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
local	local	
remote	remote	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configuration_type": "string",
  "local": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  },
  "remote": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Local node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_pairs

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

local

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the local cluster configuration.
mode	string	Specifies the mode of operation of the local cluster.
partner_cluster_reachable	boolean	Specifies whether the partner cluster is reachable from the local cluster.
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the local cluster.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
_links	_links	
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.

Name	Type	Description
reachable	boolean	Indicates the connectivity status of the mediator.
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: • example: true • Introduced in: 9.17 • x-nullable: true
uuid	string	The unique identifier for the mediator service.

partner_cluster

Partner cluster information.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

remote

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the remote cluster configuration.
mode	string	Specifies the mode of operation of the remote cluster.
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the remote cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Initiate a switchover, heal, or switchback operation

PATCH `/cluster/metrocluster`

Introduced In: 9.8

Initiates a switchover, heal or switchback operation.

Related ONTAP commands

- `metrocluster switchover`
- `metrocluster switchback`
- `metrocluster heal`
- `metrocluster modify`

Parameters

Name	Type	In	Required	Description
action	string	query	False	Action to perform on the MetroCluster. • enum: ["switchover", "negotiated_switchover", "negotiated_switchover_simulate", "switchback", "switchback_simulate", "heal_aggregates", "heal_root_aggregates"]

Name	Type	In	Required	Description
encryption_enabled	boolean	query	False	Specifies if encryption for NVLog and storage traffic is enabled. • Introduced in: 9.16
dr_group_id	integer	query	False	DR group ID. • Introduced in: 9.16
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
configuration_type	string	Displays the MetroCluster configuration type.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
local	local	
remote	remote	

Example request

```
{
  "configuration_type": "string",
  "local": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  },
  "remote": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2424873	Failed to validate the node and cluster components before the "action" operation.
2425138	Switchover cannot be performed in the current DR mode. Run "metrocluster show" to view the DR mode of the local cluster, and run "switchover" only in one of the following situations: 1. The DR mode of the local cluster is "normal". 2. The DR mode of the local cluster is "partial-switchover".
2425333	Heal DR data aggregates cannot be performed in the current DR mode. Run "metrocluster show" and "metrocluster node show" to view the DR mode of the local cluster and the DR mode of the local nodes respectively, and run "heal aggregates" only in one of the following situations: 1. The DR mode of the local cluster is "switchover", and the DR mode of all local nodes is "switchover completed". 2. The DR mode of at least one local node is "heal aggrs failed".
2425335	Heal DR root aggregates cannot be performed in the current DR mode. Run "metrocluster node show" to view the DR mode of the local nodes, and run "heal root-aggregates" only in one of the following situations: 1. The DR mode of all local nodes is "heal aggrs completed". 2. The DR mode of at least one local node is "heal roots failed".

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2427558	This MetroCluster operation cannot be run because another "action" operation is currently in progress. Run "metrocluster operation history show -job-id id -instance" to view the status of the currently running operation.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

node

Local node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

dr_pairs

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

cluster

Name	Type	Description
name	string	
uuid	string	

local

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the local cluster configuration.
mode	string	Specifies the mode of operation of the local cluster.
partner_cluster_reachable	boolean	Specifies whether the partner cluster is reachable from the local cluster.
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the local cluster.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
dr_group	dr_group	DR group reference.
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
reachable	boolean	Indicates the connectivity status of the mediator.

Name	Type	Description
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
uuid	string	The unique identifier for the mediator service.

partner_cluster

Partner cluster information.

Name	Type	Description
name	string	
uuid	string	

remote

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the remote cluster configuration.
mode	string	Specifies the mode of operation of the remote cluster.
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the remote cluster.

metrocluster

Holds MetroCluster status and configuration parameters for the local and remote clusters. REST: /api/cluster/metrocluster

Name	Type	Description
configuration_type	string	Displays the MetroCluster configuration type.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
local	local	
remote	remote	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Set up a MetroCluster configuration

POST `/cluster/metrocluster`

Introduced In: 9.8

Sets up a MetroCluster.

Required properties

- `partner_cluster.name`
- `dr_pairs`

Recommended optional properties

- `mediator.*`
- `mccip_ports`

Learn more

- DOC /cluster/metrocluster

Related ONTAP commands

- `metrocluster configuration-settings dr-group create`
- `metrocluster configuration-settings interface create`
- `metrocluster configuration-settings connection connect`
- `metrocluster configuration-settings mediator add`
- `storage aggregate create`
- `storage aggregate mirror`
- `metrocluster configure`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
configuration_type	string	Displays the MetroCluster configuration type.
dr_pairs	array[dr_pairs]	DR Pairs to create as part of a MetroCluster configure.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
local	local	

Name	Type	Description
mccip_ports	array[mccip_ports]	List of Port specifications.
mediator	mediator	Mediator information
partner_cluster	partner_cluster	Partner cluster information.
remote	remote	

Example request

```
{
  "configuration_type": "string",
  "dr_pairs": [
    {
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "partner": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "local": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  },
  "mccip_ports": [
    {
      "l3_config": {
        "ipv4_interface": {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "24"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "string",
      "vlan_id": 200
    }
  ],
  "mediator": {
    "bluexp_account_token": "string",
    "bluexp_org_id": "string",
```

```
    "ca_certificate": "string",
    "dr_group": {
      "id": 0
    },
    "ip_address": "10.10.10.7",
    "local_mediator_connectivity": "connected",
    "password": "mypassword",
    "peer_cluster": {
      "name": "cluster2",
      "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "peer_mediator_connectivity": "connected",
    "port": 31784,
    "reachable": 1,
    "service_account_client_id": "string",
    "service_account_client_secret": "string",
    "strict_cert_validation": 1,
    "type": "string",
    "use_http_proxy_local": 1,
    "use_http_proxy_remote": 1,
    "user": "myusername",
    "uuid": "string"
  },
  "partner_cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "remote": {
    "automatic_uso_failure_domain": "string",
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "string",
    "mode": "string"
  }
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2432832	Required environment variables are not set.
2432833	Operation is already running.
2432834	MetroCluster is already configured.
2432835	Operation not supported.
2432836	There are not enough disks in Pool1. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2432839	Required parameters not set.
2432840	Configuring DR Groups

Error Code	Description
2432841	Generating IP addresses
2432843	Running Aggregate Recommender
2432844	Checking remote storage pool
2432845	Mirroring aggregates
2432846	Configuring MetroCluster and DR mirroring
2432848	Setting up MetroCluster
2432849	MetroCluster setup is complete
2432851	Minimum number of required data aggregates for MetroCluster configuration are still not mirrored. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

node

Local node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

dr_pairs

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

cluster

Name	Type	Description
name	string	
uuid	string	

local

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the local cluster configuration.
mode	string	Specifies the mode of operation of the local cluster.
partner_cluster_reachable	boolean	Specifies whether the partner cluster is reachable from the local cluster.
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the local cluster.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

dr_group

DR group reference.

Name	Type	Description
id	integer	DR Group ID

peer_cluster

The peer cluster that the mediator service is used for.

Name	Type	Description
name	string	
uuid	string	

mediator

Mediator information

Name	Type	Description
bluexp_account_token	string	BlueXP account token. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
bluexp_org_id	string	BlueXP organization ID. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
ca_certificate	string	CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true
dr_group	dr_group	DR group reference.
ip_address	string	The IP address of the mediator.

Name	Type	Description
local_mediator_connectivity	string	Indicates the mediator connectivity status of the local cluster. Possible values are connected, unreachable, unusable and down-high-latency. This field is only applicable to the mediators in SnapMirror active sync configuration.
password	string	The password used to connect to the REST server on the mediator.
peer_cluster	peer_cluster	The peer cluster that the mediator service is used for.
peer_mediator_connectivity	string	Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown and down-high-latency.
port	integer	The REST server's port number on the mediator.
reachable	boolean	Indicates the connectivity status of the mediator.
service_account_client_id	string	Client ID of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true
service_account_client_secret	string	Client secret token of the BlueXP service account. This field is only applicable to the ONTAP cloud mediator. • x-ntap-createOnly: true • Introduced in: 9.17 • x-nullable: true

Name	Type	Description
strict_cert_validation	boolean	Indicates if strict validation of certificates is performed while making REST API calls to the mediator. This field is only applicable to the ONTAP Cloud Mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
type	string	Mediator type. This field is only applicable to the mediators in SnapMirror active sync configuration.
use_http_proxy_local	boolean	Indicates if the local cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • x-nullable: true
use_http_proxy_remote	boolean	Indicates if the remote cluster should use an http-proxy server while making REST API calls to the mediator. This field is only applicable to the ONTAP cloud mediator. • Default value: 1 • example: true • Introduced in: 9.17 • writeOnly: 1 • x-nullable: true
user	string	The username used to connect to the REST server on the mediator.

Name	Type	Description
uuid	string	The unique identifier for the mediator service.

partner_cluster

Partner cluster information.

Name	Type	Description
name	string	
uuid	string	

remote

Name	Type	Description
automatic_uso_failure_domain	string	This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only.
cluster	cluster	
configuration_state	string	Indicates the state of the remote cluster configuration.
mode	string	Specifies the mode of operation of the remote cluster.

Name	Type	Description
periodic_check_enabled	boolean	Indicates whether or not a periodic check is enabled on the remote cluster.

metrocluster

Holds MetroCluster status and configuration parameters for the local and remote clusters. REST: /api/cluster/metrocluster

Name	Type	Description
configuration_type	string	Displays the MetroCluster configuration type.
dr_pairs	array[dr_pairs]	DR Pairs to create as part of a MetroCluster configure.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
local	local	
mccip_ports	array[mccip_ports]	List of Port specifications.
mediator	mediator	Mediator information
partner_cluster	partner_cluster	Partner cluster information.
remote	remote	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Display MetroCluster diagnostics

Cluster MetroCluster diagnostics endpoint overview

Overview

You can use this API to initiate a MetroCluster diagnostics operation and fetch the results of a completed diagnostics operation on a MetroCluster over IP configuration. The GET operation retrieves the results of a completed diagnostics operation for the MetroCluster over IP configuration. These can include the overall high level and details for the checks done for different components. By default, the response does not include the details. If the fields query is used in the request, the response will include the details. The POST request can be used to start a MetroCluster diagnostics operation or set up a schedule for the diagnostics to be run periodically.

Details

Details provide a way to view all the checks done on a component and the result of each check. The details of the checks are not included
in the response by default. In order to fetch the details, use the `fields` query parameter.

- `node.details`
- `aggregate.details`
- `cluster.details`
- `volume.details`
- `connection.details`

Starting a MetroCluster diagnostics operation

A new MetroCluster diagnostics operation can be started by issuing a POST to /cluster/metrocluster/diagnostics. There are no extra parameters required to initiate a diagnostics operation.

Polling the POST job for status of diagnostics operation

After a successful POST /cluster/diagnostics operation is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The POST job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in

the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Running the diagnostics operation

This example shows the POST request for starting a diagnostic operation for a MetroCluster over IP configuration and the responses returned:

```
#API
/api/cluster/metrocluster/diagnostics
```

POST Request

```
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/diagnostics
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:20:53 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster/diagnostics
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the diagnostics operation job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-
005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:21:12 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 345
Content-Type: application/hal+json
{
"uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
"description": "POST /api/cluster/metrocluster/diagnostics",
"state": "running",
"message": "Checking nodes...",
"code": 2432853,
"start_time": "2020-09-22T13:20:53-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
  }
}
}
```

Final status of the diagnostics job

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:29:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 372
Content-Type: application/hal+json
{
"uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
"description": "POST /api/cluster/metrocluster/diagnostics",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-09-22T13:20:53-04:00",
"end_time": "2020-09-22T13:22:04-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
  }
}
}
```

Retrieving the diagnostics operation

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/diagnostics
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 18:04:28 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 1005
Content-Type: application/hal+json
{
"node": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
```

```
  },
  "interface": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "aggregate": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "cluster": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "connection": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "volume": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "config_replication": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/diagnostics"
```

```
  }
}
}
```

Retrieving check details for the node component

Request

```
curl -X GET https://<mgmt-
ip>/api/cluster/metrocluster/diagnostics?fields=node.details
```

Response

```
HTTP/1.1 200 OK
Date: Thu, 10 Feb 2022 00:05:12 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 4506
Content-Type: application/hal+json
{
"node": {
  "details": [
    {
      "node": {
        "uuid": "11111111-1111-1111-1111-111111111111",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/11111111-1111-1111-1111-
111111111111"
          }
        }
      },
      "cluster": {
        "uuid": "12121212-1212-1212-1212-121212121212",
        "name": "clusterA",
        "_links": {
          "self": {
            "href": "/api/cluster/12121212-1212-1212-1212-121212121212"
          }
        }
      },
      "timestamp": "2022-02-09T18:47:00-05:00",
```

```
      "checks": [
        {
          "name": "node_reachable",
          "result": "ok"
        },
        {
          "name": "metrocluster_ready",
          "result": "ok"
        },
        {
          "name": "local_ha_partner",
          "result": "ok"
        },
        {
          "name": "ha_mirroring_on",
          "result": "ok"
        },
        {
          "name": "ha_mirroring_op_state",
          "result": "ok"
        },
        {
          "name": "symmetric_ha_relationship",
          "result": "ok"
        },
        {
          "name": "remote_dr_partner",
          "result": "ok"
        },
        {
          "name": "dr_mirroring_on",
          "result": "ok"
        },
        {
          "name": "dr_mirroring_op_state",
          "result": "ok"
        },
        {
          "name": "symmetric_dr_relationship",
          "result": "ok"
        },
        {
          "name": "remote_dr_auxiliary_partner",
          "result": "ok"
        },
        {
```

```
          "name": "symmetric_dr_auxiliary_relationship",
          "result": "ok"
        },
        {
          "name": "storage_failover_enabled",
          "result": "ok"
        },
        {
          "name": "has_intercluster_lif",
          "result": "ok"
        },
        {
          "name": "node_object_limit",
          "result": "ok"
        },
        {
          "name": "automatic_uso",
          "result": "ok"
        }
      ]
    },
    {
      "node": {
        "uuid": "22222222-2222-2222-2222-222222222222",
        "name": "node2",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/22222222-2222-2222-2222-
222222222222"
          }
        }
      },
      "cluster": {
        "uuid": "23232323-2323-2323-2323-232323232323",
        "name": "clusterB",
        "_links": {
          "self": {
            "href": "/api/cluster/23232323-2323-2323-2323-232323232323"
          }
        }
      },
      "timestamp": "2022-02-09T18:47:00-05:00",
      "checks": [
        {
          "name": "node_reachable",
          "result": "ok"
```

```
      },
      {
        "name": "metrocluster_ready",
        "result": "ok"
      },
      {
        "name": "local_ha_partner",
        "result": "ok"
      },
      {
        "name": "ha_mirroring_on",
        "result": "ok"
      },
      {
        "name": "ha_mirroring_op_state",
        "result": "ok"
      },
      {
        "name": "symmetric_ha_relationship",
        "result": "ok"
      },
      {
        "name": "remote_dr_partner",
        "result": "ok"
      },
      {
        "name": "dr_mirroring_on",
        "result": "ok"
      },
      {
        "name": "dr_mirroring_op_state",
        "result": "ok"
      },
      {
        "name": "symmetric_dr_relationship",
        "result": "ok"
      },
      {
        "name": "remote_dr_auxiliary_partner",
        "result": "ok"
      },
      {
        "name": "symmetric_dr_auxiliary_relationship",
        "result": "ok"
      },
      {
```

```
          "name": "storage_failover_enabled",
          "result": "ok"
        },
        {
          "name": "has_intercluster_lif",
          "result": "ok"
        },
        {
          "name": "node_object_limit",
          "result": "ok"
        },
        {
          "name": "automatic_uso",
          "result": "ok"
        }
      ]
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/diagnostics"
  }
}
}
```


Retrieving check details for the volume component

Request

```
curl -X GET https://<mgmt-
ip>/api/cluster/metrocluster/diagnostics?fields=volume.details
```

Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 08 Apr 2022 20:07:38 GMT
Server: libzapid-httpd
Vary: Accept-Encoding
Content-Length: 928
Content-Type: application/hal+json
{
"volume": {
  "details": [
    {
      "checks": [
        {
          "name": "unmirrored_flexgroups",
          "result": "ok",
        }
      ]
    },
    {
      "checks": [
        {
          "name": "mixed_flexgroups",
          "result": "ok",
        }
      ]
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/diagnostics"
  }
}
}
```

Related ONTAP Commands

- `metrocluster check run`
- `metrocluster check show`
- `metrocluster check node show`
- `metrocluster check aggregate show`
- `metrocluster check cluster show`

- `metrocluster check connection show`
- `metrocluster check volume show`

Retrieve diagnostic operation results for a MetroCluster configuration

GET `/cluster/metrocluster/diagnostics`

Introduced In: 9.8

Retrieves the results of a completed diagnostic operation for the MetroCluster configuration.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Response

```
Status: 200, Ok
```

Name	Type	Description
aggregate	aggregate	
cluster	cluster	
config-replication	config-replication	
connection	connection	
interface	interface	
node	node	
volume	volume	

Example response


```
{
  "aggregate": {
    "details": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "checks": [
          {
            "additional_info": {
              "code": "string",
              "message": "string"
            },
            "name": "mirror_status",
            "result": "string"
          }
        ],
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "timestamp": "2016-03-10 17:35:16 -0500",
        "volume": {
          "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ],
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  },
  "cluster": {
    "details": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "checks": [
          {
            "additional_info": {
              "code": "string",
              "message": "string"
            },
            "name": "mirror_status",
            "result": "string"
          }
        ],
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "timestamp": "2016-03-10 17:35:16 -0500",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ],
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  },
  "config-replication": {
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-14 18:35:16 -0400"
  },
  "connection": {
    "details": [
      {
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
```

```
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "connections": [
          {
            "destination_address": "string",
            "partner": {
              "node": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "node1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              },
              "type": "string"
            },
            "port": "string",
            "result": "string",
            "source_address": "string",
            "state": "string"
          }
        ],
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ],
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  },
  "interface": {
    "state": "string",
    "summary": {
      "code": "string",
```

```
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  },
  "node": {
    "details": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "checks": [
          {
            "additional_info": {
              "code": "string",
              "message": "string"
            },
            "name": "mirror_status",
            "result": "string"
          }
        ],
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "timestamp": "2016-03-10 17:35:16 -0500",
        "volume": {
```

```
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ],
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  },
  "volume": {
    "details": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "checks": [
          {
            "additional_info": {
              "code": "string",
              "message": "string"
            },
            "name": "mirror_status",
            "result": "string"
          }
        ],
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
```

```
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "timestamp": "2016-03-10 17:35:16 -0500",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ],
    "state": "string",
    "summary": {
      "code": "string",
      "message": "string"
    },
    "timestamp": "2016-03-10 17:35:16 -0500"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Error Code	Description
2426405	MetroCluster is not configured in cluster "cluster". Run "metrocluster show" to verify both the local and the remote clusters are configured as MetroCluster, and then try the command again.
2432856	MetroCluster diagnostics result is not available. Use the REST API GET method on "/api/cluster/metrocluster/operations?type=check&fields=*" for more information.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

additional_info

Additional information or recovery steps to take on this component.

Name	Type	Description
code	string	Argument code
message	string	Message argument

metrocluster_diag_check

Generic object which can be used for various components which holds details of the checks of a component.

Name	Type	Description
additional_info	additional_info	Additional information or recovery steps to take on this component.
name	string	Name of type of diagnostic operation run for the component.
result	string	Result of the diagnostic operation on this component.

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

metrocluster_diag_details

Name	Type	Description
aggregate	aggregate	Aggregate
checks	array[metrocluster_diag_check]	Collection of MetroCluster checks done for component.
cluster	cluster	
node	node	

Name	Type	Description
timestamp	string	Time check was done.
volume	volume	

summary

Additional information or recovery steps to take.

Name	Type	Description
code	string	Argument code
message	string	Message argument

aggregate

Name	Type	Description
details	array[metrocluster_diag_details]	Display details of the MetroCluster check for aggregates.
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.
timestamp	string	Time of the most recent diagnostic operation for this component

cluster

Name	Type	Description
details	array[metrocluster_diag_details]	Display details of the MetroCluster check for clusters.
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.

Name	Type	Description
timestamp	string	Time of the most recent diagnostic operation for this component

config-replication

Name	Type	Description
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.
timestamp	string	Time of the most recent diagnostic operation for this component

partner

Name	Type	Description
node	node	
type	string	

metrocluster_diag_connection

Name	Type	Description
destination_address	string	
partner	partner	
port	string	
result	string	Result of the diagnostic operation on this component.
source_address	string	
state	string	

metrocluster_diag_connection_details

Name	Type	Description
cluster	cluster	
connections	array[metrocluster_diag_connection]	

Name	Type	Description
node	node	

connection

Name	Type	Description
details	array[metrocluster_diag_connection_details]	Display details of the MetroCluster check for connections.
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.
timestamp	string	Time of the most recent diagnostic operation for this component

interface

Name	Type	Description
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.
timestamp	string	Time of the most recent diagnostic operation for this component

node

Name	Type	Description
details	array[metrocluster_diag_details]	Displays details of the MetroCluster check for nodes.
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.

Name	Type	Description
timestamp	string	Time of the most recent diagnostic operation for this component

volume

Name	Type	Description
details	array[metrocluster_diag_details]	Display details of the MetroCluster check for volumes.
state	string	Status of diagnostic operation for this component.
summary	summary	Additional information or recovery steps to take.
timestamp	string	Time of the most recent diagnostic operation for this component

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Start MetroCluster diagnostics or set up a periodic diagnostic schedule

POST `/cluster/metrocluster/diagnostics`

Introduced In: 9.8

Start a MetroCluster diagnostic operation or set up a schedule for the diagnostics to be run periodically.

Parameters

Name	Type	In	Required	Description
schedule	integer	query	False	Shows the minutes of every hour when a job runs. Setting this parameter schedules the periodic job to be run to perform MetroCluster diagnostic.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2427132	MetroCluster is not configured on this cluster.
2432833	Operation is already running.
2432852	MetroCluster diagnostics start
2432853	MetroCluster diagnostics job scheduled

Error Code	Description
2432854	MetroCluster diagnostics complete
2432855	MetroCluster diagnostics operation failed. Use the REST API GET method on "/api/cluster/metrocluster/operations?type=check&fields=*" for more information.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage MetroCluster DR groups

Cluster MetroCluster dr-groups endpoint overview

Overview

You can use this API to create, perform operations, and retrieve relevant information pertaining to MetroCluster DR groups. The GET operation retrieves all the DR groups in the MetroCluster over IP configuration or a DR group information specified by the DR group id. The POST request can be used to create a new DR group in the MetroCluster over IP configuration. The DELETE operation removes a DR group information specified by

the DR group id from the existing MetroCluster over IP configuration.

Creating a new DR group

A new DR group in MetroCluster over IP configuration is created by issuing a POST to /cluster/metrocluster/dr-groups. Parameters are provided in the body of the POST request.
This operation requires a valid MetroCluster over IP configuration. The new nodes added belong to either the local or partner cluster.

Fields used for setting up a new DR group

The fields used for MetroCluster APIs are either required or optional and are described as follows:

Required configuration fields

These fields are always required for any POST /cluster/dr-groups request.

- `partner_cluster.name` - Specifies the partner cluster name to which cluster peering has been established.
- `dr_pairs` - Specifies local and DR partner node pairs. Each pair uniquely identifies a DR group.

Optional configuration fields

This field is used to set up additional MetroCluster DR configuration.

- `mccip_ports` - Specifies relevant layer 3 network configuration information for each port. These include port name, node name, IP address, gateway, and netmask. If mccip_ports is not provided, then the API automatically generates IP addresses for the ports and creates an layer 2 network configuration.

Polling the create job

After a successful POST /cluster/metrocluster/dr-groups is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The create job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Deleting a DR group using ID

A DR group in MetroCluster over IP configuration can be deleted by issuing a DELETE to /cluster/metrocluster/dr-groups/{id}. No parameters are required for the DELETE request.
The following preparation steps must be completed on the local and partner clusters before removing a DR group.

- Move all the data volumes to another DR group.
- Move all the MDV_CRS metadata volumes to another DR group.
- Delete all the MDV_aud metadata volumes that may exist in the DR group to be removed.
- Delete all the data aggregates in the DR group to be removed. Root aggregates are not deleted.
- Migrate all the data LIFs to home nodes in another DR group.
- Migrate the cluster management LIF to a home node in another DR group. Node management and inter-cluster LIFs are not migrated.

- Transfer epsilon to a node in another DR group.
  The operation is refused if the preparation steps are not completed on the local and partner clusters.

Polling the delete job

After a successful DELETE /cluster/metrocluster/dr-groups is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The delete job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Creating a DR group for MetroCluster over IP configuration

This example shows the POST body when creating a DR group for MetroCluster.

```
# API
/api/cluster/metrocluster/dr-groups
```

POST body included from file

```
dr_group_post_body.txt:
{
"partner_cluster" : {
  "name": "mcc_siteB"
},
"dr_pairs" : [
  {
    "node" : {
      "name" : "node-e"
    },
    "partner" : {
      "name" : "node-g"
    }
  }
]
}
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/dr-groups -H
"Content-Type: application+hal/json" -d "@dr_group_post_body.txt"
```

Inline POST body

```
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/dr-groups -H
"Content-Type: application+hal/json" -d '{"partner_cluster" : {"name":
"mcc_siteB" }, "dr_pairs" : [{"node" : {"name" : "node-e" }, "partner" :
{"name" : "node-g" }}]}'
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Fri, 18 Sep 2020 20:38:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster/dr-groups
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the DR group job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-
005056bb42f7
```

Job status response

The following is an example of the job status response returned by the running DR group job:

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:40:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
"uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
"description": "POST /api/cluster/metrocluster/dr-groups/",
"state": "running",
"message": "Mirroring aggregates",
"code": 2432845,
"start_time": "2020-09-18T15:38:08-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
  }
}
}
```

Final status of a successful DR Group create workflow

When the create job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report final status.

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:43:54 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
"uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
"description": "POST /api/cluster/metrocluster/dr-groups/",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-09-18T15:51:35-04:00",
"end_time": "2020-09-18T16:10:17-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
  }
}
}
```

Retrieving the MetroCluster DR Groups configured in the MetroCluster over IP configuration

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/dr-groups
```

Response

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:47:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 849
Content-Type: application/hal+json
{
"records": [
  {
    "id": 1,
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/dr-groups/1"
      }
    }
  },
  {
    "id": 2,
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/dr-groups/2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/dr-groups"
  }
}
}
```

Retrieving a Specific MetroCluster DR Group

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/dr-groups/2
```

Response

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:49:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 1049
Content-Type: application/hal+json
{
"id": 2,
"partner_cluster": {
  "name": "mcc_siteB",
  "uuid": "ea4d7114-f97f-11ea-a4bf-005056bb070a"
},
"dr_pairs": [
  {
    "node": {
      "name": "node-e",
      "uuid": "28f71e17-f988-11ea-b1dd-005056bb47e8"
    },
    "partner": {
      "name": "node-g",
      "uuid": "1af02867-f989-11ea-b86c-005056bbe97f"
    }
  },
  {
    "node": {
      "name": "node-f",
      "uuid": "b34ae3b8-f988-11ea-866b-005056bb0934"
    },
    "partner": {
      "name": "node-h",
      "uuid": "a21a2b16-f989-11ea-98d0-005056bb321d"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/dr-groups/2"
  }
}
}
```

Deleting a MetroCluster DR Group

Request

```
curl -X DELETE https://<mgmt-ip>/api/cluster/metrocluster/dr-groups/{id}
```

Response

```
HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:29:01 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
    }
  }
}
}
```

Monitoring the job progress

Use the link provided in the response to the DELETE request to fetch information for the delete job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/c24d1083-fc83-11ea-acaf-
005056bb47c1
```

Job status response

The following is an example of the job status response returned by the MetroCluster DR Group delete job.

```
HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:30:01 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 374
Content-Type: application/hal+json
{
"uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
"description": "DELETE /api/cluster/metrocluster/dr-groups/2",
"state": "running",
"message": "Unconfiguring Metrocluster DR Group",
"code": 2432859,
"start_time": "2020-09-21T23:29:01-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
  }
}
}
```

Final Status of a successful MetroCluster DR Group delete workflow

When the delete job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report the final status.

```
HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:38:08 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 374
Content-Type: application/hal+json
{
"uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
"description": "DELETE /api/cluster/metrocluster/dr-groups/2",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-09-21T23:29:01-04:00",
"end_time": "2020-09-21T23:36:36-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
  }
}
}
```

Retrieve all DR groups in a MetroCluster IP configuration

GET `/cluster/metrocluster/dr-groups`

Introduced In: 9.8

Retrieves all the DR group in the MetroCluster over IP configuration.

Related ONTAP commands

- `metrocluster configuration-settings dr-group show`

Parameters

Name	Type	In	Required	Description
partner_cluster.name	string	query	False	Filter by partner_cluster.name
partner_cluster.uuid	string	query	False	Filter by partner_cluster.uuid
dr_pairs.node.uuid	string	query	False	Filter by dr_pairs.node.uuid

Name	Type	In	Required	Description
dr_pairs.node.name	string	query	False	Filter by dr_pairs.node.name
dr_pairs.partner.uuid	string	query	False	Filter by dr_pairs.partner.uuid
dr_pairs.partner.name	string	query	False	Filter by dr_pairs.partner.name
id	integer	query	False	Filter by id
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records
records	array[metrocluster_dr_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "dr_pairs": [
        {
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "partner": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "id": 0,
      "partner_cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Local node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_pair

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
_links	_links	
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	

Name	Type	Description
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

partner_cluster

Partner cluster information.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

metrocluster_dr_group

DR group information.

Name	Type	Description
_links	self_link	
dr_pairs	array[dr_pair]	
id	integer	DR Group ID
partner_cluster	partner_cluster	Partner cluster information.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new DR group in a MetroCluster IP configuration

POST `/cluster/metrocluster/dr-groups`

Introduced In: 9.8

Creates a new DR group in the MetroCluster over IP configuration.

Required properties

- `partner_cluster.name`
- `dr_pairs`

Recommended optional properties

- `mccip_ports`

Learn more

- DOC /cluster/metrocluster/dr-groups

Related ONTAP commands

- `metrocluster configuration-settings dr-group create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
dr_pairs	array[dr_pair]	
id	integer	DR Group ID
mccip_ports	array[mccip_ports]	List of Port specifications.

Name	Type	Description
partner_cluster	partner_cluster	Partner cluster information.

Example request

```
{
  "dr_pairs": [
    {
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "partner": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "id": 0,
  "mccip_ports": [
    {
      "l3_config": {
        "ipv4_interface": {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "24"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "string",
      "vlan_id": 200
    }
  ],
  "partner_cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2430034	Node "node" is not found in partner cluster "cluster". Use the "cluster show" command on the partner cluster to see the list of valid node names.
2430060	The DR group cannot be created while node "node" on cluster "cluster" is configured for MetroCluster.
2432833	Operation is already running.

Error Code	Description
2432836	There are not enough disks in Pool1. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2432840	Configuring DR Groups
2432841	Generating IP addresses
2432844	Checking remote storage pool
2432845	Mirroring aggregates
2432846	Configuring MetroCluster and DR mirroring
2432857	Adding new MetroCluster DR Group
2432858	MetroCluster DR Group setup done

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

node

Local node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
name	string	
uuid	string	

dr_pair

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

partner_cluster

Partner cluster information.

Name	Type	Description
name	string	
uuid	string	

metrocluster_dr_group

DR group information.

Name	Type	Description
dr_pairs	array[dr_pair]	
id	integer	DR Group ID
mccip_ports	array[mccip_ports]	List of Port specifications.
partner_cluster	partner_cluster	Partner cluster information.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Remove a DR group from a MetroCluster IP configuration

DELETE `/cluster/metrocluster/dr-groups/{id}`

Introduced In: 9.8

Remove the DR group from the current MetroCluster over IP configuration specified by the DR group id.

Related ONTAP commands

- `metrocluster configuration-settings dr-group delete`

Parameters

Name	Type	In	Required	Description
id	string	path	True	
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425574	Two or more DR groups must be configured to remove a DR group from the MetroCluster configuration.
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2432833	Operation is already running.
2432859	Unconfiguring MetroCluster DR Group
2432860	Unmirroring Aggregates
2432861	Unassigning Remote Disks
2432862	Disabling Cluster HA and Storage Failover HA
2432863	Disconnecting and deleting network connections

Error Code	Description
2432864	Unconfiguring and deleting the DR Group
2432865	Deleting MetroCluster DR Group
2432866	MetroCluster DR Group delete done

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve DR group information using the DR group ID

GET `/cluster/metrocluster/dr-groups/{id}`

Introduced In: 9.8

Retrieves the DR group information specified by the DR group id.

Related ONTAP commands

- `metrocluster configuration-settings dr-group show`

Parameters

Name	Type	In	Required	Description
id	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
dr_pairs	array[dr_pair]	
id	integer	DR Group ID
partner_cluster	partner_cluster	Partner cluster information.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dr_pairs": [
    {
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "partner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "id": 0,
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Local node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

partner

Partner node of the DR Group.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_pair

Name	Type	Description
node	node	Local node of the DR Group.
partner	partner	Partner node of the DR Group.

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

l3_config

Name	Type	Description
ipv4_interface	ipv4_interface	Object to setup an interface along with its default router.

node

Node information

Name	Type	Description
_links	_links	
name	string	
uuid	string	

mccip_ports

Port configuration specification.
l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

Name	Type	Description
l3_config	l3_config	
name	string	Port name
node	node	Node information
uuid	string	Port UUID
vlan_id	integer	VLAN ID

partner_cluster

Partner cluster information.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update MetroCluster interconnects

Cluster MetroCluster interconnects endpoint overview

Overview

You can use this API to retrieve and display relevant information pertaining to MetroCluster interconnect status. The `/cluster/metrocluster/interconnects` endpoint returns a list of all the interconnects in MetroCluster and their status. Each individual interconnect can be queried individually using the `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}` endpoint. You can also use this API to modify relevant information related to MetroCluster interconnect. These include address, netmask, and gateway. Modify a MetroCluster interconnect using the `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}` endpoint.

Examples

Retrieving MetroCluster interconnects

```
GET https://<mgmt-ip>/api/cluster/metrocluster/interconnects
{
  "records": [
      {
          "node": {
              "name": "cluster1_01",
              "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
              "_links": {
                  "self": {
                      "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                  }
              }
          },
          "partner_type": "ha",
          "adapter": "e0f",
          "_links": {
              "self": {
                  "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/ha/e0f"
              }
          }
      },
      {
          "node": {
              "name": "cluster1_01",
              "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
              "_links": {
                  "self": {
                      "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                  }
              }
          },
          "partner_type": "ha",
          "adapter": "e0g",
          "_links": {
              "self": {
                  "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/ha/e0g"
              }
          }
```

```
      },
      {
          "node": {
              "name": "cluster1_01",
              "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
              "_links": {
                  "self": {
                      "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                  }
              }
          },
          "partner_type": "dr",
          "adapter": "e0f",
          "_links": {
              "self": {
                  "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/dr/e0f"
              }
          }
      },
      {
          "node": {
              "name": "cluster1_01",
              "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
              "_links": {
                  "self": {
                      "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                  }
              }
          },
          "partner_type": "dr",
          "adapter": "e0g",
          "_links": {
              "self": {
                  "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/dr/e0g"
              }
          }
      },
      {
          "node": {
              "name": "cluster1_01",
```

```
                "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                    }
                }
            },
            "partner_type": "aux",
            "adapter": "e0f",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/aux/e0f"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_01",
                "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                    }
                }
            },
            "partner_type": "aux",
            "adapter": "e0g",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/aux/e0g"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
```

```
00505682dc8b"
                    }
                }
            },
            "partner_type": "ha",
            "adapter": "e0f",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/ha/e0f"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                    }
                }
            },
            "partner_type": "ha",
            "adapter": "e0g",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/ha/e0g"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                    }
                }
            },
```

```
            "partner_type": "dr",
            "adapter": "e0f",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0f"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                    }
                }
            },
            "partner_type": "dr",
            "adapter": "e0g",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0g"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                    }
                }
            },
            "partner_type": "aux",
            "adapter": "e0f",
            "_links": {
                "self": {
```

```
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0f"
                }
            }
        },
        {
            "node": {
                "name": "cluster1_02",
                "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                    }
                }
            },
            "partner_type": "aux",
            "adapter": "e0g",
            "_links": {
                "self": {
                    "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0g"
                }
            }
        }
    ],
    "num_records": 12,
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/interconnects"
        }
    }
}
```


Retrieves information about a specific MetroCluster interconnect

```
https://<mgmt-ip>/api/cluster/metrocluster/interconnects/774b4fbc-86f9-
11e9-9051-005056825c71/aux/e0f
{
  "node": {
      "name": "cluster1_01",
      "uuid": "46147363-9857-11e9-9a55-005056828eb9",
      "_links": {
          "self": {
              "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-
005056828eb9"
          }
      }
  },
  "partner_type": "aux",
  "adapter": "e0f",
  "state": "up",
  "type": "iwarp",
  "interfaces": [
    {
      "address": "10.2.3.5",
      "netmask": "255.255.255.0"
    }
  ],
  "mirror": {
      "state": "online",
      "enabled": true
  },
  "multipath_policy": "static_map",
  "_links": {
      "self": {
          "href": "/api/cluster/metrocluster/interconnects/46147363-9857-
11e9-9a55-005056828eb9/ha/e0f"
      }
  }
}
```

This example shows how to modify the network address assigned to the home port. Fields required: address.

```
curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"address": "1.2.3.4"}]}'
```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 21:58:36 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

This example shows how to modify the netmask assigned to the interface. Be sure to change to a valid subnet. Fields required: netmask.

```
curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"netmask": "2.2.2.2"}]}'
```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 22:11:35 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

This example shows how to modify the gateway assigned to the interface. Please make sure to update it on the switch/router first. Assuming it is a new one, the new gateway and IP address must reside in the same subnet range as the interface IP address. Fields required: gateway.

```
curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"gateway": "1.2.3.4"}]}'
```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 22:11:35 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

Retrieve interconnect adapter information for nodes in MetroCluster

GET `/cluster/metrocluster/interconnects`

Introduced In: 9.8

Retrieves a list of interconnect adapter information for nodes in the MetroCluster.

Related ONTAP Commands

- `metrocluster interconnect show`

Learn more

- DOC /cluster/metrocluster/interconnects

Parameters

Name	Type	In	Required	Description
interfaces.netmask	string	query	False	Filter by interfaces.netmask • Introduced in: 9.9
interfaces.gateway	string	query	False	Filter by interfaces.gateway • Introduced in: 9.9
interfaces.address	string	query	False	Filter by interfaces.address • Introduced in: 9.9

Name	Type	In	Required	Description
mirror.enabled	boolean	query	False	Filter by mirror.enabled • Introduced in: 9.11
mirror.state	string	query	False	Filter by mirror.state • Introduced in: 9.11
type	string	query	False	Filter by type
adapter	string	query	False	Filter by adapter
state	string	query	False	Filter by state
multipath_policy	string	query	False	Filter by multipath_policy • Introduced in: 9.11
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
vlan_id	integer	query	False	Filter by vlan_id • Introduced in: 9.9 • Max value: 4095 • Min value: 1
partner_type	string	query	False	Filter by partner_type
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[metrocluster_interconnect]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "adapter": "string",
      "interfaces": [
        {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "24"
        }
      ],
      "mirror": {
        "state": "string"
      },
      "multipath_policy": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "partner_type": "string",
      "state": "string",
      "type": "string",
      "vlan_id": 0
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2424994	MetroCluster is not supported when HAOSC is not set to "mcc", "mcc-2n" or "mccip". Run the "ha-config modify chassis" and "ha-config modify controller" commands in maintenance mode to change the HAOSC settings on node "node" in cluster "cluster".
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2427132	MetroCluster is not configured on this cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

interfaces

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

mirror

Name	Type	Description
enabled	boolean	Specifies the administrative state of the NVRAM mirror between partner nodes.
state	string	Specifies the operational state of the NVRAM mirror between partner nodes.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

metrocluster_interconnect

Data for a MetroCluster interconnect. REST: /api/cluster/metrocluster/interconnects

Name	Type	Description
_links	self_link	
adapter	string	Adapter
interfaces	array[interfaces]	List of objects which contain interface information such as its IP address, netmask and gateway.
mirror	mirror	
multipath_policy	string	Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster.
node	node	
partner_type	string	Partner type
state	string	Adapter status
type	string	Adapter type
vlan_id	integer	VLAN ID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve information about a MetroCluster interconnect for a partner type and adapter

GET `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}`

Introduced In: 9.8

Retrieves information about a MetroCluster Interconnect for a specific partner type and adapter.

Related ONTAP Commands

- `metrocluster interconnect show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
partner_type	string	path	True	DR Partner type
adapter	string	path	True	Interconnect adapter.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	

Name	Type	Description
adapter	string	Adapter
interfaces	array[interfaces]	List of objects which contain interface information such as its IP address, netmask and gateway.
mirror	mirror	
multipath_policy	string	Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster.
node	node	
partner_type	string	Partner type
state	string	Adapter status
type	string	Adapter type
vlan_id	integer	VLAN ID

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adapter": "string",
  "interfaces": [
    {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  ],
  "mirror": {
    "state": "string"
  },
  "multipath_policy": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_type": "string",
  "state": "string",
  "type": "string",
  "vlan_id": 0
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2427132	MetroCluster is not configured on this cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

interfaces

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

mirror

Name	Type	Description
enabled	boolean	Specifies the administrative state of the NVRAM mirror between partner nodes.
state	string	Specifies the operational state of the NVRAM mirror between partner nodes.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a MetroCluster interconnect interface

PATCH `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}`

Introduced In: 9.10

Updates a MetroCluster interconnect interface.

Related ONTAP commands

- `metrocluster configuration-settings interface modify`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
partner_type	string	path	True	DR Partner type

Name	Type	In	Required	Description
adapter	string	path	True	Interconnect adapter
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
adapter	string	Adapter
interfaces	array[interfaces]	List of objects which contain interface information such as its IP address, netmask and gateway.
mirror	mirror	

Name	Type	Description
multipath_policy	string	Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster.
node	node	
partner_type	string	Partner type
state	string	Adapter status
type	string	Adapter type
vlan_id	integer	VLAN ID

Example request

```
{
  "adapter": "string",
  "interfaces": [
    {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  ],
  "mirror": {
    "state": "string"
  },
  "multipath_policy": "string",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_type": "string",
  "state": "string",
  "type": "string",
  "vlan_id": 0
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error has occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.
2430347	The interface is already configured for port "adapter" with IP address "interfaces.address" on node "node.name". To configure a new IP address, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new IP address.
2430348	The interface is already configured for port "adapter" with gateway "interfaces.gateway" on node "node.name". To configure a new gateway or no gateway, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new gateway or no gateway.

Error Code	Description
2430352	The interface is already configured for port "adapter" with netmask "interfaces.netmask" on node "node.name". To configure a new netmask, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new netmask.
2430445	Configuration for the interface "port" on node "node.name" in cluster "cluster" does not exist. Use the "metrocluster configuration-settings interface show" command to list the valid interfaces configured for MetroCluster over IP.
2432885	Unable to modify the interface for adapter "port". Reason: At least one interface parameter is required to modify the interface.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

interfaces

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

mirror

Name	Type	Description
enabled	boolean	Specifies the administrative state of the NVRAM mirror between partner nodes.
state	string	Specifies the operational state of the NVRAM mirror between partner nodes.

_links

node

Name	Type	Description
name	string	
uuid	string	

metrocluster_interconnect

Data for a MetroCluster interconnect. REST: /api/cluster/metrocluster/interconnects

Name	Type	Description
adapter	string	Adapter
interfaces	array[interfaces]	List of objects which contain interface information such as its IP address, netmask and gateway.
mirror	mirror	
multipath_policy	string	Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster.
node	node	
partner_type	string	Partner type
state	string	Adapter status
type	string	Adapter type
vlan_id	integer	VLAN ID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve MetroCluster node configurations

Cluster MetroCluster nodes endpoint overview

Overview

Retrieves the configuration information for the nodes in the MetroCluster configuration.

Example

```
GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
{
  "records": [
      {
          "dr_group_id": 1,
          "cluster": {
              "name": "cluster1",
              "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
              "_links": {
                  "self": {
                      "href": "/api/cluster"
                  }
              }
          },
          "node": {
              "name": "cluster1_01",
              "uuid": "46147363-9857-11e9-9a55-005056828eb9",
              "_links": {
                  "self": {
                      "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-
005056828eb9"
                  }
              }
          },
          "dr_mirroring_state": "enabled",
          "configuration_state": "configured",
          "_links": {
```

```
                "self": {
                    "href": "/api/cluster/metrocluster/nodes/46147363-9857-
11e9-9a55-005056828eb9"
                }
            }
        },
        {
            "dr_group_id": 1,
            "cluster": {
                "name": "cluster1",
                "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
                "_links": {
                    "self": {
                        "href": "/api/cluster"
                    }
                }
            },
            "node": {
                "name": "cluster1_02",
                "uuid": "cf1dc67f-9857-11e9-bf80-005056829db6",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/cf1dc67f-9857-11e9-bf80-
005056829db6"
                    }
                }
            },
            "dr_mirroring_state": "enabled",
            "configuration_state": "configured",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/nodes/cf1dc67f-9857-
11e9-bf80-005056829db6"
                }
            }
        },
        {
            "dr_group_id": 1,
            "cluster": {
                "name": "cluster3",
                "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",
                "_links": {
                    "self": {
                        "href": "/api/cluster/peers/aa8aa15a-9857-11e9-80c9-
00505682e684/cluster"
                    }
```

```
                }
            },
            "node": {
                "name": "cluster3_01",
                "uuid": "5b3b983b-9857-11e9-80c9-00505682e684",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/5b3b983b-9857-11e9-80c9-
00505682e684"
                    }
                }
            },
            "dr_mirroring_state": "enabled",
            "configuration_state": "configured",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/nodes/5b3b983b-9857-
11e9-80c9-00505682e684"
                }
            }
        },
        {
            "dr_group_id": 1,
            "cluster": {
                "name": "cluster3",
                "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",
                "_links": {
                    "self": {
                        "href": "/api/cluster/peers/aa8aa15a-9857-11e9-80c9-
00505682e684/cluster"
                    }
                }
            },
            "node": {
                "name": "cluster3_02",
                "uuid": "45bff538-9858-11e9-a624-005056820377",
                "_links": {
                    "self": {
                        "href": "/api/cluster/nodes/45bff538-9858-11e9-a624-
005056820377"
                    }
                }
            },
            "dr_mirroring_state": "enabled",
            "configuration_state": "configured",
            "_links": {
```

```
                "self": {
                    "href": "/api/cluster/metrocluster/nodes/45bff538-9858-
11e9-a624-005056820377"
                }
            }
        }
    ],
    "num_records": 4,
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/nodes?fields=%2A"
        }
    }
}
```

Retrieve MetroCluster nodes and configurations

GET `/cluster/metrocluster/nodes`

Introduced In: 9.8

Retrieves MetroCluster nodes and their configurations.

Related ONTAP Commands

- `metrocluster node show`

Learn more

- DOC /cluster/metrocluster/nodes

Parameters

Name	Type	In	Required	Description
dr_auxiliary_cluster.name	string	query	False	Filter by dr_auxiliary_cluster.name • Introduced in: 9.12
dr_auxiliary_cluster.uuid	string	query	False	Filter by dr_auxiliary_cluster.uuid • Introduced in: 9.12

Name	Type	In	Required	Description
dr_group_id	integer	query	False	Filter by dr_group_id
configuration_state	string	query	False	Filter by configuration_state
dr_partner_cluster.name	string	query	False	Filter by dr_partner_cluster.name • Introduced in: 9.12
dr_partner_cluster.uuid	string	query	False	Filter by dr_partner_cluster.uuid • Introduced in: 9.12
ha_partner.name	string	query	False	Filter by ha_partner.name • Introduced in: 9.12
ha_partner.system_id	string	query	False	Filter by ha_partner.system_id • Introduced in: 9.12
ha_partner.uuid	string	query	False	Filter by ha_partner.uuid • Introduced in: 9.12
ha_partner_cluster.name	string	query	False	Filter by ha_partner_cluster.name • Introduced in: 9.12

Name	Type	In	Required	Description
ha_partner_cluster.uuid	string	query	False	Filter by ha_partner_cluster.uuid • Introduced in: 9.12
dr_partner.name	string	query	False	Filter by dr_partner.name • Introduced in: 9.12
dr_partner.system_id	string	query	False	Filter by dr_partner.system_id • Introduced in: 9.12
dr_partner.uuid	string	query	False	Filter by dr_partner.uuid • Introduced in: 9.12
cluster.name	string	query	False	Filter by cluster.name
cluster.uuid	string	query	False	Filter by cluster.uuid
limit_enforcement	string	query	False	Filter by limit_enforcement • Introduced in: 9.12
dr_operation_state	string	query	False	Filter by dr_operation_state • Introduced in: 9.9
dr_auxiliary_partner.name	string	query	False	Filter by dr_auxiliary_partner.name • Introduced in: 9.12

Name	Type	In	Required	Description
dr_auxiliary_partner.system_id	string	query	False	Filter by dr_auxiliary_partner.system_id • Introduced in: 9.12
dr_auxiliary_partner.uuid	string	query	False	Filter by dr_auxiliary_partner.uuid • Introduced in: 9.12
is_mccip	boolean	query	False	Filter by is_mccip • Introduced in: 9.12
node.name	string	query	False	Filter by node.name
node.system_id	string	query	False	Filter by node.system_id • Introduced in: 9.12
node.uuid	string	query	False	Filter by node.uuid
dr_mirroring_state	string	query	False	Filter by dr_mirroring_state
automatic_uso	boolean	query	False	Filter by automatic_uso • Introduced in: 9.9
encryption_enabled	boolean	query	False	Filter by encryption_enabled • Introduced in: 9.15
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[metrocluster_node]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "configuration_state": "string",
      "dr_auxiliary_cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "dr_auxiliary_partner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "system_id": "string",
```

```
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "dr_group_id": 0,
      "dr_mirroring_state": "string",
      "dr_operation_state": "string",
      "dr_partner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "system_id": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "dr_partner_cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ha_partner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "system_id": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ha_partner_cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "limit_enforcement": "string",
      "node": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "system_id": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_auxiliary_cluster

DR AUX cluster.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_auxiliary_partner

AUX partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

dr_partner

DR partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

dr_partner_cluster

DR partner cluster.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ha_partner

HA partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

ha_partner_cluster

HA partner cluster.

Name	Type	Description
_links	_links	
name	string	

Name	Type	Description
uuid	string	

node

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

metrocluster_node

Data for a node in a MetroCluster. REST: /api/cluster/metrocluster/nodes

Name	Type	Description
_links	self_link	
automatic_uso	boolean	Specifies if automatic unplanned switchover is enabled.
cluster	cluster	
configuration_state	string	Configuration state of the node.
dr_auxiliary_cluster	dr_auxiliary_cluster	DR AUX cluster.
dr_auxiliary_partner	dr_auxiliary_partner	AUX partner node.
dr_group_id	integer	DR Group ID.
dr_mirroring_state	string	State of the DR mirroring configuration.
dr_operation_state	string	State of the DR operation.
dr_partner	dr_partner	DR partner node.
dr_partner_cluster	dr_partner_cluster	DR partner cluster.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
ha_partner	ha_partner	HA partner node.

Name	Type	Description
ha_partner_cluster	ha_partner_cluster	HA partner cluster.
is_mccip	boolean	Indicates whether the configuration type is MCC-IP.
limit_enforcement	string	Indicates if the node object limits are enforced.
node	node	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the node configuration in MetroCluster

GET `/cluster/metrocluster/nodes/{node.uuid}`

Introduced In: 9.8

Retrieves the node configuration in the MetroCluster.

Related ONTAP Commands

- `metrocluster node show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
automatic_uso	boolean	Specifies if automatic unplanned switchover is enabled.
cluster	cluster	
configuration_state	string	Configuration state of the node.
dr_auxiliary_cluster	dr_auxiliary_cluster	DR AUX cluster.
dr_auxiliary_partner	dr_auxiliary_partner	AUX partner node.
dr_group_id	integer	DR Group ID.
dr_mirroring_state	string	State of the DR mirroring configuration.
dr_operation_state	string	State of the DR operation.
dr_partner	dr_partner	DR partner node.
dr_partner_cluster	dr_partner_cluster	DR partner cluster.
encryption_enabled	boolean	Indicates if the encryption for NVLog and storage traffic is enabled.
ha_partner	ha_partner	HA partner node.
ha_partner_cluster	ha_partner_cluster	HA partner cluster.

Name	Type	Description
is_mccip	boolean	Indicates whether the configuration type is MCC-IP.
limit_enforcement	string	Indicates if the node object limits are enforced.
node	node	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "string",
  "dr_auxiliary_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_auxiliary_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_group_id": 0,
  "dr_mirroring_state": "string",
  "dr_operation_state": "string",
  "dr_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
```

```
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ha_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ha_partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "limit_enforcement": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_auxiliary_cluster

DR AUX cluster.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_auxiliary_partner

AUX partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

dr_partner

DR partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

dr_partner_cluster

DR partner cluster.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ha_partner

HA partner node.

Name	Type	Description
_links	self_link	
name	string	
system_id	string	
uuid	string	

ha_partner_cluster

HA partner cluster.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

Name	Type	Description
_links	self_link	
name	string	
system_id	string	

Name	Type	Description
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve MetroCluster operations

Cluster MetroCluster operations endpoint overview

Overview

Retrieves a list of recent MetroCluster operations. To view more information about a specific operation, use the `/cluster/metrocluster/operations/{uuid}` API endpoint.

Examples

Retrieves all MetroCluster operations

```
GET https://<mgmt-ip>/api/cluster/metrocluster/operations?fields=*
{
  "records": [
      {
          "uuid": "a14ae39f-8d85-11e9-b4a7-00505682dc8b",
          "type": "check",
          "state": "successful",
```

```
            "start_time": "2019-06-14T11:15:00-07:00",
            "end_time": "2019-06-14T11:16:08-07:00",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/operations/a14ae39f-
8d85-11e9-b4a7-00505682dc8b"
                }
            }
        },
        {
            "uuid": "7058df27-8d85-11e9-bbc9-005056826931",
            "type": "configure",
            "state": "successful",
            "start_time": "2019-06-12T19:46:27-07:00",
            "end_time": "2019-06-12T19:48:17-07:00",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/operations/7058df27-
8d85-11e9-bbc9-005056826931"
                }
            }
        },
        {
            "uuid": "7849515d-8d84-11e9-bbc9-005056826931",
            "type": "connect",
            "state": "successful",
            "start_time": "2019-06-12T19:39:30-07:00",
            "end_time": "2019-06-12T19:42:02-07:00",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/operations/7849515d-
8d84-11e9-bbc9-005056826931"
                }
            }
        },
        {
            "uuid": "331c79ad-8d84-11e9-b4a7-00505682dc8b",
            "type": "interface_create",
            "state": "successful",
            "start_time": "2019-06-12T19:37:35-07:00",
            "end_time": "2019-06-12T19:37:41-07:00",
            "_links": {
                "self": {
                    "href": "/api/cluster/metrocluster/operations/331c79ad-
8d84-11e9-b4a7-00505682dc8b"
                }
```

```
            }
        }
    ],
    "num_records": 4,
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/operations?fields=%2A"
        }
    }
}
```

Retrieves Information about a specific MetroCluster operation

```
GET https://<mgmt-ip>/api/cluster/metrocluster/operations/0db12274-86fd-
11e9-8053-00505682c342
{
  "uuid": "0db12274-86fd-11e9-8053-00505682c342",
  "name": "check",
  "state": "successful",
  "start_time": "2019-06-06T16:15:01-07:00",
  "end_time": "2019-06-06T16:16:05-07:00",
  "_links": {
      "self": {
          "href": "/api/cluster/metrocluster/operations/0db12274-86fd-
11e9-8053-00505682c342"
      }
  }
}
```

Retrieve MetroCluster operations on the local cluster

GET `/cluster/metrocluster/operations`

Introduced In: 9.8

Retrieves the list of MetroCluster operations on the local cluster.

Related ONTAP Commands

- `metrocluster operation history show`

Learn more

- DOC /cluster/metrocluster/operations

Parameters

Name	Type	In	Required	Description
command_line	string	query	False	Filter by command_line
additional_info	string	query	False	Filter by additional_info
type	string	query	False	Filter by type
uuid	string	query	False	Filter by uuid
errors	string	query	False	Filter by errors
start_time	string	query	False	Filter by start_time
state	string	query	False	Filter by state
node.uuid	string	query	False	Filter by node.uuid • Introduced in: 9.9
node.name	string	query	False	Filter by node.name • Introduced in: 9.9
end_time	string	query	False	Filter by end_time
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[metrocluster_operation]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "additional_info": "MetroCluster switchover with auto heal
completed successfully.",
      "command_line": "metrocluster switchover",
      "end_time": "2016-03-10 17:35:16 -0500",
      "errors": [
        "siteB (warning): Unable to prepare the partner cluster for a
pending switchback operation. Reason: entry doesn't exist. Reboot the
nodes in the partner cluster before using the \"metrocluster
switchback\" command."
      ],
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "start_time": "2016-03-10 17:33:16 -0500",
      "state": "completed_with_warnings",
      "type": "switchover",
      "uuid": "11111111-2222-3333-4444-abcdefabcdef"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Node from where the command is executed.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

metrocluster_operation

Data for a MetroCluster operation. REST: /api/cluster/metrocluster/operations

Name	Type	Description
_links	self_link	
additional_info	string	Additional information for the auto heal.
command_line	string	Command line executed with the options specified.

Name	Type	Description
end_time	string	End Time
errors	array[string]	List of errors in the operation.
node	node	Node from where the command is executed.
start_time	string	Start Time
state	string	Indicates the state of the operation.
type	string	Name of the operation.
uuid	string	Identifier for the operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve information about a MetroCluster operation

GET `/cluster/metrocluster/operations/{uuid}`

Introduced In: 9.8

Retrieves information about a specific MetroCluster operation.

Related ONTAP Commands

- `metrocluster operation show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier for the operation.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
additional_info	string	Additional information for the auto heal.
command_line	string	Command line executed with the options specified.
end_time	string	End Time
errors	array[string]	List of errors in the operation.
node	node	Node from where the command is executed.
start_time	string	Start Time
state	string	Indicates the state of the operation.
type	string	Name of the operation.
uuid	string	Identifier for the operation.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "additional_info": "MetroCluster switchover with auto heal completed
successfully.",
  "command_line": "metrocluster switchover",
  "end_time": "2016-03-10 17:35:16 -0500",
  "errors": [
    "siteB (warning): Unable to prepare the partner cluster for a
pending switchback operation. Reason: entry doesn't exist. Reboot the
nodes in the partner cluster before using the \"metrocluster
switchback\" command."
  ],
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "start_time": "2016-03-10 17:33:16 -0500",
  "state": "completed_with_warnings",
  "type": "switchover",
  "uuid": "11111111-2222-3333-4444-abcdefabcdef"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2425734	An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Node from where the command is executed.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve MetroCluster SVMs

Cluster MetroCluster svms endpoint overview

Overview

Retrieves configuration information for all pairs of SVMs in MetroCluster.

Related ONTAP commands

- `metrocluster vserver show`

Examples

```
GET https://<mgmt-ip>/api/cluster/metrocluster/svms/?fields=*"
{
"records": [
  {
    "cluster": {
      "uuid": "9623385a-6c4c-11ec-a8cc-005056aca0c8",
      "name": "cluster1"
    },
    "svm": {
      "uuid": "2ea76ca7-6c5f-11ec-b430-005056aca0c8",
      "name": "svm1"
    },
    "partner_svm": {
      "uuid": "2ea76ca7-6c5f-11ec-b430-005056aca0c8",
      "name": "svm1-mc"
    },
    "configuration_state": "healthy",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/svms/9623385a-6c4c-11ec-a8cc-
005056aca0c8/2ea76ca7-6c5f-11ec-b430-005056aca0c8"
      }
    }
  },
  {
    "cluster": {
      "uuid": "988d33a0-6c4c-11ec-8e28-005056aceeed",
      "name": "cluster2"
    },
    "svm": {
      "uuid": "2fa16461-6c5f-11ec-8f69-005056aceeed",
      "name": "svm2"
```

```
    },
    "partner_svm": {
      "uuid": "2fa16461-6c5f-11ec-8f69-005056aceeed",
      "name": "svm2-mc"
    },
    "configuration_state": "healthy",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/svms/988d33a0-6c4c-11ec-8e28-
005056aceeed/2fa16461-6c5f-11ec-8f69-005056aceeed"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/svms/?fields=*"
  }
}
}
```

Retrieve configuration information for all SVM pairs in a MetroCluster configuration

GET `/cluster/metrocluster/svms`

Introduced In: 9.11

Retrieves configuration information for all pairs of SVMs in MetroCluster. REST /api/cluster/metrocluster/svms/?

Parameters

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
cluster.name	string	query	False	Filter by cluster.name
cluster.uuid	string	query	False	Filter by cluster.uuid

Name	Type	In	Required	Description
configuration_state	string	query	False	Filter by configuration_state
failed_reason	string	query	False	Filter by failed_reason
partner_svm.name	string	query	False	Filter by partner_svm.name
partner_svm.uuid	string	query	False	Filter by partner_svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[metrocluster_svm]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "configuration_state": "string",
      "failed_reason": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "partner_svm": {
        "name": "string",
        "uuid": "string"
      },
      "svm": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Reason for SVM object replication failure.

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message

partner_svm

Name	Type	Description
name	string	MetroCluster partner SVM name.
uuid	string	MetroCluster partner SVM UUID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

metrocluster_svm

Retrieves configuration information for all pairs of SVMs in MetroCluster. REST /api/cluster/metrocluster/svms/?

Name	Type	Description
_links	self_link	
cluster	cluster	
configuration_state	string	Configuration state.
failed_reason	error	Reason for SVM object replication failure.
partner_svm	partner_svm	
svm	svm	SVM, applies only to SVM-scoped objects.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve configuration information for an SVM

GET `/cluster/metrocluster/svms/{cluster.uuid}/{svm.uuid}`

Introduced In: 9.11

Retrieves configuration information for an SVM in a MetroCluster relationship.

Parameters

Name	Type	In	Required	Description
cluster.uuid	string	path	True	Cluster ID
svm.uuid	string	path	True	SVM UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
cluster	cluster	
configuration_state	string	Configuration state.
failed_reason	error	Reason for SVM object replication failure.
partner_svm	partner_svm	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "string",
  "failed_reason": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "partner_svm": {
    "name": "string",
    "uuid": "string"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Reason for SVM object replication failure.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

partner_svm

Name	Type	Description
name	string	MetroCluster partner SVM name.
uuid	string	MetroCluster partner SVM UUID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster nodes

Cluster nodes endpoint overview

Overview

You can use this API to add nodes to a cluster, update node-specific configurations, and retrieve the current node configuration details.

Adding a node to a cluster

You can add a node to a cluster by issuing a POST /cluster/nodes request to a node currently in the cluster. All nodes must be running the same version of ONTAP to use this API. Mixed version joins are not supported in this release. You can provide properties as fields in the body of the POST request to configure node-specific

settings. On a successful request, POST /cluster/nodes returns a status code of 202 and job information in the body of the request. You can use the /cluster/jobs APIs to track the status of the node add job.

Fields used for adding a node

Fields used for the /cluster/nodes APIs fall into the following categories:

- Required node fields
- Optional fields
- Network interface fields
- Records field

Required node fields

The following field is required for any POST /cluster/nodes request:

- cluster_interface.ip.address

Optional fields

All of the following fields are used to set up additional cluster-wide configurations:

- name
- location
- records

Network interface fields

You can set a node-specific configuration for each node by using the POST /cluster/nodes API. If you provide a field in the body of a node, provide it for all nodes in the POST body.
You can provide the node management interface for each node if all node management interfaces in the cluster use the same subnet mask. If the node management interfaces use different subnet masks, use the /network/ip/interfaces API to configure the node management interfaces.

The records field

To add multiple nodes to the cluster in one request, provide an array named "records" with multiple node entries. Each node entry in "records" must follow the required and optional fields listed previously. When only adding a single node, you do not need a "records" field. See "Examples" for an example of how to use the "records" field.

Create recommended aggregates parameter

When you set the "create_recommended_aggregates" parameter to "true", aggregates based on an optimal layout recommended by the system are created on each of the nodes being added to the cluster. The default setting is "false".

Modifying node configurations

The following fields can be used to modify a node configuration:

- name
- location

Modifying service processor configurations

When modifying the "service_processor" properties, the job returns success immediately if valid network information is passed in. The values remain in their old state until the network information changes have taken effect on the service processor. You can poll the modified properties until the values are updated.

Deleting a node from a cluster

You can delete a node from the cluster. Before deleting a node from the cluster, shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails.
You can use the "force" flag to forcibly remove a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

Node state

The node "state" field in the /cluster/nodes API represents the current operational state of individual nodes. Note that the state of a node is a transient value and can change depending on the current condition of the node, especially during reboot, takeover, and giveback.
Possible values for the node state are:

- *up* - Node is fully operational and is able to accept and handle management requests. It is connected to a majority of healthy (up) nodes in the cluster through the cluster interconnect and all critical services are online.
- *booting* - Node is starting up and is not yet fully functional. It might not yet be accessible through the management interface or cluster interconnect. One or more critical services are offline on the node and the node is not taken over. The HA partner reports the node's firmware state as "SF_BOOTING", "SF_BOOTED", or "SF_CLUSTERWAIT".
- *down* - Node is known to be down. It cannot be reached through the management interface or cluster interconnect. The HA partner can be reached and reports that the node is halted/rebooted without takeover. Or, the HA partner cannot be reached (or no SFO configured) but the node shutdown request has been recorded by the quorum change coordinator. The state is reported by the node's HA partner.
- *taken_over* - Node is taken over by its HA partner. The state is reported by the node's HA partner.
- *waiting_for_giveback* - Node is taken over by its HA partner and is now ready and waiting for giveback. To bring the node up, either issue the "giveback" command to the HA partner node or wait for auto-giveback, if enabled. The state is reported by the node's HA partner.
- *degraded* - Node is known to be up but is not yet fully functional. The node can be reached through the cluster interconnect but one or more critical services are offline. Or, the node is not reachable but the node's HA partner can be reached and reports that the node is up with firmware state "SF_UP".
- *unknown* - Node state cannot be determined.

HA

The "ha" field in the /cluster/nodes API shows the takeover and giveback states of the node along with the current values of the HA fields "enabled" and "auto_giveback".
You can modify the HA fields "enabled" and "auto_giveback", which will change the HA states of the node.

Takeover

The takeover "state" field shows the different takeover states of the node. When the state is "failed", the "code" and "message" fields display.
Possible values for takeover states are:

- *not_attempted* - Takeover operation is not started and takeover is possible.
- *not_possible* - Takeover operation is not possible. Check the failure message.
- *in_progress* - Takeover operation is in progress. The node is taking over its partner.
- *in_takeover* - Takeover operation is complete.
- *failed* - Takeover operation failed. Check the failure message.

Possible values for takeover failure code and messages are:

- *code*: 852130
  message: Failed to initiate takeover. Run the "storage failover show-takeover" command for more information.
- *code*: 852131
  message: Takeover cannot be completed. Reason: disabled.

Giveback

The giveback "state" field shows the different giveback states of the node. When the state is "failed", the "code" and "message" fields display.
Possible values for giveback states are:

- *nothing_to_giveback* - Node does not have partner aggregates to giveback.
- *not_attempted* - Giveback operation is not started.
- *in_progress* - Giveback operation is in progress.
- *failed* - Giveback operation failed. Check the failure message.

Possible values for giveback failure codes and messages are:

- *code*: 852126
  message: Failed to initiate giveback. Run the "storage failover show-giveback" command for more information.

Performance monitoring

Performance of a node can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the performance of a node in terms of cpu utilization. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

The following examples show how to add nodes to a cluster, update node properties, shutdown and reboot a node, and remove a node from the cluster.

Adding a single node with a minimal configuration

```
# Body
add_single_node.txt(body):
{
"cluster_interface": {
  "ip": {
    "address": "1.1.1.1"
  }
}
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/nodes" -d
"@add_single_node.txt"
```

Adding multiple nodes in the same request and creating recommended aggregates

```
# Body
add_multiple_nodes.txt(body):
{
"records": [
    {
        "name": "node1",
        "cluster_interface": {
          "ip": {
            "address": "1.1.1.1"
          }
        }
    },
    {
        "name": "node2",
        "cluster_interface": {
          "ip": {
            "address": "2.2.2.2"
          }
        }
    }
]
}

# Request
curl -X POST "https://<mgmt-
ip>/api/cluster/nodes?create_recommended_aggregates=true" -d
"@add_multiple_nodes.txt"
```

Modifying a cluster-wide configuration

```
# Body
modify_name_and_location.txt(body):
{
"name": "renamedNode",
"location": "newLocation"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes" -d
"@modify_name_and_location.txt"
```

Shutting down a node

```
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes/{uuid}?action=shutdown"
```

Powering off a node using SP assistance

```
curl -X PATCH "https://<mgmt-
ip>/api/cluster/nodes/{uuid}?action=power_off"
```

Deleting a node from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}"
```

Force a node deletion from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}?force=true"
```

Retrieving the state of all nodes in a cluster

```
#Request
curl -siku admin -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=state"

#Response
{
"records": [
  {
    "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
    "name": "node2",
    "state": "up",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
      }
    }
  },
  {
    "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
    "name": "node1",
    "state": "up",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
```

Retrieving nodes that are in the spare low condition in a cluster

```
# Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=is_spares_low"

#Response
{
"records": [
  {
    "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
    "name": "node2",
    "spares_low": true,
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
      }
    }
  },
  {
    "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
    "name": "node1",
    "spares_low": false,
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
```

Retrieving statistics and metric for a node

In this example, the API returns the "statistics" and "metric" properties.

```
#Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=statistics,metric"

#Response
{
    "records": [
    {
      "uuid": "6b29327b-21ca-11ea-99aa-005056bb420b",
      "name": "example_node_name",
      "metric": {
        "timestamp": "2019-12-19T15:50:45Z",
        "duration": "PT15S",
        "status": "ok",
        "processor_utilization": 3
      },
      "statistics": {
        "timestamp": "2019-12-19T15:50:48Z",
        "status": "ok",
        "processor_utilization_raw": 6409411622,
        "processor_utilization_base": 74330229886
      }
    }
  ],
  "num_records": 1
}
```

Retrieving takeover and giveback failure codes and messages

```
#Request
curl -siku admin -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=ha"

#Response
{
"records": [
  {
    "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
    "name": "node2",
    "ha": {
      "enabled": false,
      "auto_giveback": false,
      "partners": [
        {
```

```
          "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
          "name": "node1"
        }
      ],
      "giveback": {
            "state": "nothing_to_giveback"
      },
      "takeover": {
        "state": "not_possible",
        "failure": {
          "message": "Takeover cannot be completed. Reason: disabled.",
          "code": 852131
        }
      },
      "ports": [
        {
          "name": "e0h"
        },
        {
          "name": "N/A"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
      }
    }
  },
  {
    "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
    "name": "node1",
    "ha": {
      "enabled": false,
      "auto_giveback": false,
      "partners": [
        {
          "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
          "name": "node2"
        }
      ],
      "giveback": {
            "state": "nothing_to_giveback"
      },
      "takeover": {
        "state": "not_possible",
```

```
        "failure": {
          "message": "Takeover cannot be completed. Reason: disabled.",
          "code": 852131
        }
      },
      "ports": [
        {
          "name": "e0h"
        },
        {
          "name": "N/A"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
```

Retrieving external cache information for a node

In this example, the API returns the external_cache property.

```
#Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=external_cache"

#Response
{
"records": [
  {
    "uuid": "71af8235-bea9-11eb-874a-005056bbab13",
    "name": "node2",
    "external_cache": {
      "is_enabled": false,
      "is_hya_enabled": true,
      "is_rewarm_enabled": false,
      "pcs_size": 256
    },
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/71af8235-bea9-11eb-874a-005056bbab13"
      }
    }
  },
  {
    "uuid": "8c4cbf08-bea9-11eb-b8ae-005056bb16aa",
    "name": "node1",
    "external_cache": {
      "is_enabled": false,
      "is_hya_enabled": true,
      "is_rewarm_enabled": false,
      "pcs_size": 256
    },
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/8c4cbf08-bea9-11eb-b8ae-005056bb16aa"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=external_cache"
  }
}
}
```

Retrieve the nodes in a cluster

GET `/cluster/nodes`

Introduced In: 9.6

Retrieves the nodes in the cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `system node show`

Parameters

Name	Type	In	Required	Description
hw_assist.status.partner.state	string	query	False	Filter by hw_assist.status.partner.state • Introduced in: 9.11
hw_assist.status.partner.port	integer	query	False	Filter by hw_assist.status.partner.port • Introduced in: 9.11
hw_assist.status.partner.ip	string	query	False	Filter by hw_assist.status.partner.ip • Introduced in: 9.11
hw_assist.status.local.state	string	query	False	Filter by hw_assist.status.local.state • Introduced in: 9.11

Name	Type	In	Required	Description
hw_assist.status.local.port	integer	query	False	Filter by hw_assist.status.local.port • Introduced in: 9.11
hw_assist.status.local.ip	string	query	False	Filter by hw_assist.status.local.ip • Introduced in: 9.11
hw_assist.status.enabled	boolean	query	False	Filter by hw_assist.status.enabled • Introduced in: 9.11
ha.partners.uuid	string	query	False	Filter by ha.partners.uuid
ha.partners.name	string	query	False	Filter by ha.partners.name
ha.auto_giveback	boolean	query	False	Filter by ha.auto_giveback
ha.type	string	query	False	Filter by ha.type • Introduced in: 9.17
ha.enabled	boolean	query	False	Filter by ha.enabled
ha.takeover_check.reasons	string	query	False	Filter by ha.takeover_check.reasons • Introduced in: 9.14

Name	Type	In	Required	Description
ha.takeover_check.takeover_possible	boolean	query	False	Filter by ha.takeover_check.takeover_possible • Introduced in: 9.14
ha.giveback.status.state	string	query	False	Filter by ha.giveback.status.state • Introduced in: 9.11
ha.giveback.status.aggregate.uuid	string	query	False	Filter by ha.giveback.status.aggregate.uuid • Introduced in: 9.11
ha.giveback.status.aggregate.name	string	query	False	Filter by ha.giveback.status.aggregate.name • Introduced in: 9.11
ha.giveback.status.error.message	string	query	False	Filter by ha.giveback.status.error.message • Introduced in: 9.11
ha.giveback.status.error.code	string	query	False	Filter by ha.giveback.status.error.code • Introduced in: 9.11
ha.giveback.failure.message	string	query	False	Filter by ha.giveback.failure.message • Introduced in: 9.7

Name	Type	In	Required	Description
ha.giveback.failure.code	integer	query	False	Filter by ha.giveback.failure.code • Introduced in: 9.7
ha.giveback.state	string	query	False	Filter by ha.giveback.state • Introduced in: 9.7
ha.takeover.failure.code	integer	query	False	Filter by ha.takeover.failure.code • Introduced in: 9.7
ha.takeover.failure.message	string	query	False	Filter by ha.takeover.failure.message • Introduced in: 9.7
ha.takeover.state	string	query	False	Filter by ha.takeover.state • Introduced in: 9.7
ha.interconnect.state	string	query	False	Filter by ha.interconnect.state • Introduced in: 9.11
ha.interconnect.adapter	string	query	False	Filter by ha.interconnect.adapter • Introduced in: 9.11

Name	Type	In	Required	Description
ha.ports.state	string	query	False	Filter by ha.ports.state • Introduced in: 9.7
ha.ports.number	integer	query	False	Filter by ha.ports.number • Introduced in: 9.7
name	string	query	False	Filter by name
nvlog.backing_type	string	query	False	Filter by nvlog.backing_type • Introduced in: 9.17
nvlog.swap_mode	string	query	False	Filter by nvlog.swap_mode • Introduced in: 9.17
external_cache_bypass.enabled	boolean	query	False	Filter by external_cache_bypass.enabled • Introduced in: 9.17
external_cache_bypass.large_read_ops_allow_percent	integer	query	False	Filter by external_cache_bypass.large_read_ops_allow_percent • Introduced in: 9.17
anti_ransomware_version	string	query	False	Filter by anti_ransomware_version • Introduced in: 9.16

Name	Type	In	Required	Description
vendor_serial_number	string	query	False	Filter by vendor_serial_number • Introduced in: 9.7
system_id	string	query	False	Filter by system_id • Introduced in: 9.7
state	string	query	False	Filter by state • Introduced in: 9.7
location	string	query	False	Filter by location
metrocluster.ports.name	string	query	False	Filter by metrocluster.ports.name • Introduced in: 9.8
metrocluster.type	string	query	False	Filter by metrocluster.type • Introduced in: 9.8
metrocluster.custom_vlan_capable	boolean	query	False	Filter by metrocluster.custom_vlan_capable • Introduced in: 9.8
system_machine_type	string	query	False	Filter by system_machine_type • Introduced in: 9.7
date	string	query	False	Filter by date

Name	Type	In	Required	Description
vm.provider_type	string	query	False	Filter by vm.provider_type • Introduced in: 9.7
cluster_interfaces.name	string	query	False	Filter by cluster_interfaces.name
cluster_interfaces.ip.address	string	query	False	Filter by cluster_interfaces.ip.address
cluster_interfaces.uuid	string	query	False	Filter by cluster_interfaces.uuid
external_cache.is_rewarm_enabled	boolean	query	False	Filter by external_cache.is_rewarm_enabled • Introduced in: 9.10
external_cache.pcs_size	integer	query	False	Filter by external_cache.pcs_size • Introduced in: 9.10
external_cache.is_enabled	boolean	query	False	Filter by external_cache.is_enabled • Introduced in: 9.10
external_cache.is_hya_enabled	boolean	query	False	Filter by external_cache.is_hya_enabled • Introduced in: 9.10

Name	Type	In	Required	Description
snaplock.compliance_clock_time	string	query	False	Filter by snaplock.compliance_clock_time • Introduced in: 9.12
owner	string	query	False	Filter by owner • Introduced in: 9.9
system_aggregate.uuid	string	query	False	Filter by system_aggregate.uuid • Introduced in: 9.14
system_aggregate.name	string	query	False	Filter by system_aggregate.name • Introduced in: 9.14
controller.failed_power_supply.message.message	string	query	False	Filter by controller.failed_power_supply.message.message • Introduced in: 9.9
controller.failed_power_supply.message.code	string	query	False	Filter by controller.failed_power_supply.message.code • Introduced in: 9.9
controller.failed_power_supply.count	integer	query	False	Filter by controller.failed_power_supply.count • Introduced in: 9.9

Name	Type	In	Required	Description
controller.frus.state	string	query	False	Filter by controller.frus.state
controller.frus.type	string	query	False	Filter by controller.frus.type
controller.frus.id	string	query	False	Filter by controller.frus.id
controller.flash_cache.slot	string	query	False	Filter by controller.flash_cache.slot
controller.flash_cache.model	string	query	False	Filter by controller.flash_cache.model
controller.flash_cache.capacity	integer	query	False	Filter by controller.flash_cache.capacity
controller.flash_cache.serial_number	string	query	False	Filter by controller.flash_cache.serial_number
controller.flash_cache.device_id	integer	query	False	Filter by controller.flash_cache.device_id • Introduced in: 9.9
controller.flash_cache.state	string	query	False	Filter by controller.flash_cache.state
controller.flash_cache.firmware_version	string	query	False	Filter by controller.flash_cache.firmware_version
controller.flash_cache.hardware_revision	string	query	False	Filter by controller.flash_cache.hardware_revision

Name	Type	In	Required	Description
controller.flash_cache.firmware_file	string	query	False	Filter by controller.flash_cache.firmware_file • Introduced in: 9.9
controller.flash_cache.part_number	string	query	False	Filter by controller.flash_cache.part_number
controller.cpu.firmware_release	string	query	False	Filter by controller.cpu.firmware_release • Introduced in: 9.9
controller.cpu.count	integer	query	False	Filter by controller.cpu.count • Introduced in: 9.9
controller.cpu.processor	string	query	False	Filter by controller.cpu.processor • Introduced in: 9.9
controller.board	string	query	False	Filter by controller.board • Introduced in: 9.9
controller.failed_fan.message.message	string	query	False	Filter by controller.failed_fan.message.message • Introduced in: 9.9

Name	Type	In	Required	Description
controller.failed_fan.message.code	string	query	False	Filter by controller.failed_fan.message.code • Introduced in: 9.9
controller.failed_fan.count	integer	query	False	Filter by controller.failed_fan.count • Introduced in: 9.9
controller.memory_size	integer	query	False	Filter by controller.memory_size • Introduced in: 9.9
controller.over_temperature	string	query	False	Filter by controller.over_temperature
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
metric.processor_utilization	integer	query	False	Filter by metric.processor_utilization • Introduced in: 9.8
metric.uuid	string	query	False	Filter by metric.uuid • Introduced in: 9.10

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
is_spares_low	boolean	query	False	Filter by is_spares_low • Introduced in: 9.10
uuid	string	query	False	Filter by uuid
storage_configuration	string	query	False	Filter by storage_configuration • Introduced in: 9.9
nvram.id	integer	query	False	Filter by nvram.id • Introduced in: 9.9
nvram.battery_state	string	query	False	Filter by nvram.battery_state • Introduced in: 9.9
membership	string	query	False	Filter by membership
serial_number	string	query	False	Filter by serial_number
service_processor.is_ip_configured	boolean	query	False	Filter by service_processor.is_ip_configured • Introduced in: 9.10
service_processor.state	string	query	False	Filter by service_processor.state

Name	Type	In	Required	Description
service_processor.primary.is_current	boolean	query	False	Filter by service_processor.primary.is_current • Introduced in: 9.10
service_processor.primary.version	string	query	False	Filter by service_processor.primary.version • Introduced in: 9.10
service_processor.primary.state	string	query	False	Filter by service_processor.primary.state • Introduced in: 9.10
service_processor.api_service.limit_access	boolean	query	False	Filter by service_processor.api_service.limit_access • Introduced in: 9.11
service_processor.api_service.enabled	boolean	query	False	Filter by service_processor.api_service.enabled • Introduced in: 9.11
service_processor.api_service.port	integer	query	False	Filter by service_processor.api_service.port • Introduced in: 9.11
service_processor.backup.state	string	query	False	Filter by service_processor.backup.state • Introduced in: 9.10

Name	Type	In	Required	Description
service_processor.backup.version	string	query	False	Filter by service_processor.backup.version • Introduced in: 9.10
service_processor.backup.is_current	boolean	query	False	Filter by service_processor.backup.is_current • Introduced in: 9.10
service_processor.ssh_info.allowed_addresses	string	query	False	Filter by service_processor.ssh_info.allowed_addresses • Introduced in: 9.10
service_processor.firmware_version	string	query	False	Filter by service_processor.firmware_version
service_processor.last_update_state	string	query	False	Filter by service_processor.last_update_state • Introduced in: 9.10
service_processor.web_service.enabled	boolean	query	False	Filter by service_processor.web_service.enabled • Introduced in: 9.14
service_processor.web_service.limit_access	boolean	query	False	Filter by service_processor.web_service.limit_access • Introduced in: 9.14

Name	Type	In	Required	Description
service_processor.ipv4_interface.netmask	string	query	False	Filter by service_processor.ipv4_interface.netmask
service_processor.ipv4_interface.setup_state	string	query	False	Filter by service_processor.ipv4_interface.setup_state • Introduced in: 9.14
service_processor.ipv4_interface.gateway	string	query	False	Filter by service_processor.ipv4_interface.gateway
service_processor.ipv4_interface.address	string	query	False	Filter by service_processor.ipv4_interface.address
service_processor.ipv4_interface.enabled	boolean	query	False	Filter by service_processor.ipv4_interface.enabled • Introduced in: 9.14
service_processor.auto_config.ipv4_subnet	string	query	False	Filter by service_processor.auto_config.ipv4_subnet • Introduced in: 9.11
service_processor.auto_config.ipv6_subnet	string	query	False	Filter by service_processor.auto_config.ipv6_subnet • Introduced in: 9.11

Name	Type	In	Required	Description
service_processor.ipv6_interface.is_ipv6_ra_enabled	boolean	query	False	Filter by service_processor.ipv6_interface.is_ipv6_ra_enabled • Introduced in: 9.14
service_processor.ipv6_interface.router_ip	string	query	False	Filter by service_processor.ipv6_interface.router_ip • Introduced in: 9.14
service_processor.ipv6_interface.enabled	boolean	query	False	Filter by service_processor.ipv6_interface.enabled • Introduced in: 9.14
service_processor.ipv6_interface.setup_state	string	query	False	Filter by service_processor.ipv6_interface.setup_state • Introduced in: 9.14
service_processor.ipv6_interface.netmask	integer	query	False	Filter by service_processor.ipv6_interface.netmask
service_processor.ipv6_interface.link_local_ip	string	query	False	Filter by service_processor.ipv6_interface.link_local_ip • Introduced in: 9.14
service_processor.ipv6_interface.gateway	string	query	False	Filter by service_processor.ipv6_interface.gateway

Name	Type	In	Required	Description
service_processor.ipv6_interface.address	string	query	False	Filter by service_processor.ipv6_interface.address
service_processor.type	string	query	False	Filter by service_processor.type • Introduced in: 9.10
service_processor.dhcp_enabled	boolean	query	False	Filter by service_processor.dhcp_enabled
service_processor.link_status	string	query	False	Filter by service_processor.link_status
service_processor.autoupdate_enabled	boolean	query	False	Filter by service_processor.autoupdate_enabled • Introduced in: 9.10
service_processor.mac_address	string	query	False	Filter by service_processor.mac_address
management_interfaces.name	string	query	False	Filter by management_interfaces.name
management_interfaces.ip.address	string	query	False	Filter by management_interfaces.ip.address
management_interfaces.uuid	string	query	False	Filter by management_interfaces.uuid

Name	Type	In	Required	Description
statistics.processor_utilization_base	integer	query	False	Filter by statistics.processor_utilization_base • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.processor_utilization_raw	integer	query	False	Filter by statistics.processor_utilization_raw • Introduced in: 9.8
model	string	query	False	Filter by model
uptime	integer	query	False	Filter by uptime
version.minor	integer	query	False	Filter by version.minor
version.full	string	query	False	Filter by version.full
version.major	integer	query	False	Filter by version.major
version.generation	integer	query	False	Filter by version.generation
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anti_ransomware_version": "1.0",
      "cluster_interfaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "ip": {
            "address": "10.10.10.7"
          },
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "controller": {
        "board": "System Board XXVIII",
        "cpu": {
          "count": 20,
          "firmware_release": "string",
          "processor": "string"
        },
        "failed_fan": {
          "count": 1,
          "message": {
            "code": "111411207",
            "message": "There are no failed fans."
```

```
          }
        },
        "failed_power_supply": {
          "count": 1,
          "message": {
            "code": "111411208",
            "message": "There are no failed power supplies."
          }
        },
        "flash_cache": [
          {
            "capacity": 1024000000000,
            "device_id": 0,
            "firmware_file": "X9170_O000Z6300NVM",
            "firmware_version": "NA05",
            "hardware_revision": "A1",
            "model": "X1970A",
            "part_number": "119-00207",
            "serial_number": "A22P5061550000187",
            "slot": "6-1",
            "state": "string"
          }
        ],
        "frus": [
          {
            "id": "string",
            "state": "string",
            "type": "string"
          }
        ],
        "memory_size": 1024000000,
        "over_temperature": "string"
      },
      "date": "2019-04-17 11:49:26 -0400",
      "external_cache": {
        "is_enabled": 1,
        "is_hya_enabled": 1,
        "is_rewarm_enabled": 1
      },
      "external_cache_bypass": {
        "enabled": 1,
        "large_read_ops_allow_percent": 100,
        "reset": 1
      },
      "ha": {
        "giveback": {
```

```
          "failure": {
            "code": 852126,
            "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
          },
          "state": "failed",
          "status": [
            {
              "aggregate": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "aggr1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              },
              "error": {
                "code": "852126",
                "message": "string"
              },
              "state": "string"
            }
          ]
        },
        "interconnect": {
          "adapter": "MVIA-RDMA",
          "state": "string"
        },
        "partners": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "ports": [
          {
            "number": 0,
            "state": "active"
          }
        ],
```

```
        "takeover": {
          "failure": {
            "code": 852130,
            "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
          },
          "state": "failed"
        },
        "takeover_check": {
          "reasons": [
            "string"
          ]
        },
        "type": "string"
      },
      "hw_assist": {
        "status": {
          "local": {
            "ip": "string",
            "state": "string"
          },
          "partner": {
            "ip": "string",
            "state": "string"
          }
        }
      },
      "location": "rack 2 row 5",
      "management_interfaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "ip": {
            "address": "10.10.10.7"
          },
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "membership": "string",
      "metric": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "processor_utilization": 13,
        "status": "ok",
        "timestamp": "2017-01-25 06:20:13 -0500",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "metrocluster": {
        "ports": [
          {
            "name": "e1b"
          }
        ],
        "type": "string"
      },
      "model": "FAS3070",
      "name": "node-01",
      "nvlog": {
        "backing_type": "string",
        "swap_mode": "string"
      },
      "nvram": {
        "battery_state": "string",
        "id": 0
      },
      "owner": "Example Corp",
      "serial_number": "4048820-60-9",
      "service_processor": {
        "api_service": {
          "port": 0
        },
        "auto_config": {
          "ipv4_subnet": "ipv4_mgmt",
          "ipv6_subnet": "ipv6_mgmt"
        },
        "backup": {
          "state": "string",
          "version": "11.6"
        },
        "firmware_version": "string",
        "ipv4_interface": {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "255.255.0.0",
```

```
          "setup_state": "string"
        },
        "ipv6_interface": {
          "address": "fd20:8b1e:b255:5011:10:141:4:97",
          "gateway": "fd20:8b1e:b255:5011:10::1",
          "link_local_ip": "FE80::/10",
          "netmask": 64,
          "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
          "setup_state": "string"
        },
        "last_update_state": "string",
        "link_status": "string",
        "mac_address": "string",
        "primary": {
          "state": "string",
          "version": "11.6"
        },
        "ssh_info": {
          "allowed_addresses": [
            "10.10.10.7/24"
          ]
        },
        "state": "string",
        "type": "string"
      },
      "snaplock": {
        "compliance_clock_time": "2018-06-04 15:00:00 -0400"
      },
      "state": "string",
      "statistics": {
        "processor_utilization_base": 12345123,
        "processor_utilization_raw": 13,
        "status": "ok",
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "storage_configuration": "string",
      "system_aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "system_id": 92027651,
```

```
      "system_machine_type": "7Y56-CTOWW1",
      "uptime": 300536,
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
      "vendor_serial_number": 791603000068,
      "version": {
        "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
        "generation": 9,
        "major": 4,
        "minor": 0
      },
      "vm": {
        "provider_type": "string"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information

Name	Type	Description
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	local	
partner	partner	

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

management_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

Name	Type	Description
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.

Name	Type	Description
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.

Name	Type	Description
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP. • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true
backup	backup	Provides the properties of the service processor backup partition.
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true".
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
ipv6_interface	ipv6_interface	Object to setup an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	

Name	Type	Description
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.

Name	Type	Description
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

records

Complete node information

Name	Type	Description
_links	_links	
anti_ransomware_version	string	Anti ransomware version.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.

Name	Type	Description
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
hw_assist	hw_assist	The hardware assist information.
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	

Name	Type	Description
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
statistics	statistics	Raw CPU performance for the nodes.

Name	Type	Description
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a node or nodes to a cluster

POST `/cluster/nodes`

Introduced In: 9.6

Adds a node or nodes to the cluster.

Required properties

- `cluster_interface.ip.address`

Related ONTAP commands

- `cluster add-node`
- `network interface create`
- `storage aggregate auto-provision`
- `system node modify`
- `system service-processor network modify`

Parameters

Name	Type	In	Required	Description
create_recommended_aggregates	boolean	query	False	Creates aggregates based on an optimal layout recommended by the system. • Default value: • Introduced in: 9.7
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.

Name	Type	Description
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

Example request


```
{
  "anti_ransomware_version": "1.0",
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    },
    "flash_cache": [
      {
        "capacity": 1024000000000,
        "device_id": 0,
        "firmware_file": "X9170_O000Z6300NVM",
        "firmware_version": "NA05",
        "hardware_revision": "A1",
        "model": "X1970A",
        "part_number": "119-00207",
        "serial_number": "A22P5061550000187",
```

```
        "slot": "6-1",
        "state": "string"
      }
    ],
    "frus": [
      {
        "id": "string",
        "state": "string",
        "type": "string"
      }
    ],
    "memory_size": 1024000000,
    "over_temperature": "string"
  },
  "date": "2019-04-17 11:49:26 -0400",
  "external_cache": {
    "is_enabled": 1,
    "is_hya_enabled": 1,
    "is_rewarm_enabled": 1
  },
  "external_cache_bypass": {
    "enabled": 1,
    "large_read_ops_allow_percent": 100,
    "reset": 1
  },
  "ha": {
    "giveback": {
      "failure": {
        "code": 852126,
        "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
      },
      "state": "failed",
      "status": [
        {
          "aggregate": {
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "error": {
            "code": "852126",
            "message": "string"
          },
          "state": "string"
        }
      ]
```

```
    },
    "interconnect": {
      "adapter": "MVIA-RDMA",
      "state": "string"
    },
    "partners": [
      {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "ports": [
      {
        "number": 0,
        "state": "active"
      }
    ],
    "takeover": {
      "failure": {
        "code": 852130,
        "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
      },
      "state": "failed"
    },
    "takeover_check": {
      "reasons": [
        "string"
      ]
    },
    "type": "string"
  },
  "location": "rack 2 row 5",
  "management_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "management_interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "membership": "string",
  "metrocluster": {
```

```
    "ports": [
      {
        "name": "e1b"
      }
    ],
    "type": "string"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvlog": {
    "backing_type": "string",
    "swap_mode": "string"
  },
  "nvram": {
    "battery_state": "string",
    "id": 0
  },
  "owner": "Example Corp",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "api_service": {
      "port": 0
    },
    "auto_config": {
      "ipv4_subnet": "ipv4_mgmt",
      "ipv6_subnet": "ipv6_mgmt"
    },
    "autoupdate_enabled": true,
    "backup": {
      "state": "string",
      "version": "11.6"
    },
    "dhcp_enabled": true,
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "255.255.0.0",
      "setup_state": "string"
    },
    "last_update_state": "string",
    "link_status": "string",
    "mac_address": "string",
    "primary": {
      "state": "string",
      "version": "11.6"
```

```
      },
      "ssh_info": {
        "allowed_addresses": [
          "10.10.10.7/24"
        ]
      },
      "state": "string",
      "type": "string"
    },
    "snaplock": {
      "compliance_clock_time": "2018-06-04 15:00:00 -0400"
    },
    "state": "string",
    "storage_configuration": "string",
    "system_aggregate": {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "system_id": 92027651,
    "system_machine_type": "7Y56-CTOWW1",
    "uptime": 300536,
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
    "vendor_serial_number": 791603000068,
    "vm": {
      "provider_type": "string"
    }
  }
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262245	The value provided was invalid.
1179795	A node being added is already in the cluster.
1179813	Fields set for one node must be set for all nodes.
1179817	The IP address, subnet mask, and gateway must all be provided for cluster management interface.
1179818	The IP address and gateway must be of the same family.
1179821	An IP address and subnet mask conflicts with an existing entry.
1179850	Internal error. Failed to find the gateway for the default SVM.
1179851	Failed to set the node management LIF configuration on the node.
1377682	IPv6 is not enabled in the cluster.

Error Code	Description
9240591	The name is not valid. The name is already in use by a cluster node, SVM, or it is the name of the local cluster.
9240594	An invalid name was provided.
11862025	The specified node management address and existing node management address belong to two subnets. Create a node management interface after creating the cluster or provide cluster and node management interfaces from the same subnet as the cluster management interface.
131727360	A node cannot be added to the cluster. This is a generic code, see response message for details.
131727382	Failed to contact the node using the cluster IP address.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

Name	Type	Description
ip	node_setup_ip	The IP configuration for cluster setup.

ip

IP information

cluster_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	

Name	Type	Description
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.

Name	Type	Description
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.

Name	Type	Description
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.

Name	Type	Description
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

Name	Type	Description
ip	node_setup_ip	The IP configuration for cluster setup.

management_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".

Name	Type	Description
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.
backup	backup	Provides the properties of the service processor backup partition.
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	

Name	Type	Description
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
name	string	
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.

Name	Type	Description
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

node

Complete node information

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.

Name	Type	Description
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	

Name	Type	Description
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.

Name	Type	Description
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a node from a cluster

DELETE `/cluster/nodes/{uuid}`

Introduced In: 9.7

Deletes a node from the cluster.
Note that before deleting a node from the cluster, you must shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails.

Optional parameters:

- `force` - Forcibly removes a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

Related ONTAP commands

- `cluster remove-node`

Learn more

- DOC /cluster/nodes

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	

Name	Type	In	Required	Description
force	boolean	query	False	Set the force flag to "true" to forcibly remove a node that is down and cannot be brought online to remove its shared resources. • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
458755	Replication service is offline.
458758	Failed to load job for cluster remove node operation as the job exists.
1179732	Cannot remove a node in a single-node cluster.
1179735	Node is not part of a cluster.
1179848	Operation not supported at the current effective cluster version.
1179849	Operation failed because the effective cluster version could not be verified.
1182805	Cannot remove a node from the node network address of the node to be removed.
2293765	Removing a node only works for nodes not in failover configuration.

Error Code	Description
2293767	Node has volumes. Either move or delete them from the node before removing the node.
2293768	Node is the home node for one or more logical interfaces.
2293769	Node is the current node for one or more logical interfaces.
2293770	Node has data logical interfaces configured as target node.
2293787	Cannot remove node a node with epsilon.
2293788	Failed to check HA configuration in the cluster.
2293789	Removing a node only works for nodes not in HA configuration.
2293790	Failed to check if the node has epsilon.
2293796	Cluster ring is offline on the node
2293798	Cannot forcibly remove a node that is online.
2293800	Node is configured with MetroCluster.
2293801	Cannot remove node because it has foreign LUN Imports.
2293812	Node is a member of MetroCluster DR group.
2293813	Cannot remove a node from the cluster because a controller replacement is in progress.
2293814	The DELETE operation is not supported until the cluster is upgraded.
2293816	Cannot remove node because its Storage Encryption devices use authentication keys (AKs) that will not be available to the node after it leaves the cluster.
2293821	Cannot remove a node that is offline.
2293842	A node can only be removed if all of its aggregates are home.
2293843	Cannot determine if all aggregates belonging to the node to be removed are home.
2293844	Cannot determine if storage failover is enabled.
10551347	An update is in progress.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve node information

GET `/cluster/nodes/{uuid}`

Introduced In: 9.6

Retrieves information for the node.

Related ONTAP commands

- `cluster add-node-status`
- `cluster date show`
- `cluster ha show`
- `network interface show`
- `network port show`
- `storage failover show`
- `system controller show`
- `system node show`
- `system node show-discovered`
- `system service-processor network show`
- `system service-processor show`
- `system service-processor ssh show`
- `system service-processor image show`
- `version`
- `system service-processor api-service show`
- `system service-processor network auto-configuration show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
anti_ransomware_version	string	Anti ransomware version.

Name	Type	Description
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
hw_assist	hw_assist	The hardware assist information.
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
statistics	statistics	Raw CPU performance for the nodes.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate

Name	Type	Description
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "anti_ransomware_version": "1.0",
  "cluster_interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    },
    "flash_cache": [
      {
```

```
        "capacity": 1024000000000,
        "device_id": 0,
        "firmware_file": "X9170_O000Z6300NVM",
        "firmware_version": "NA05",
        "hardware_revision": "A1",
        "model": "X1970A",
        "part_number": "119-00207",
        "serial_number": "A22P5061550000187",
        "slot": "6-1",
        "state": "string"
      }
    ],
    "frus": [
      {
        "id": "string",
        "state": "string",
        "type": "string"
      }
    ],
    "memory_size": 1024000000,
    "over_temperature": "string"
  },
  "date": "2019-04-17 11:49:26 -0400",
  "external_cache": {
    "is_enabled": 1,
    "is_hya_enabled": 1,
    "is_rewarm_enabled": 1
  },
  "external_cache_bypass": {
    "enabled": 1,
    "large_read_ops_allow_percent": 100,
    "reset": 1
  },
  "ha": {
    "giveback": {
      "failure": {
        "code": 852126,
        "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
      },
      "state": "failed",
      "status": [
        {
          "aggregate": {
            "_links": {
              "self": {
```

```
                "href": "/api/resourcelink"
              }
            },
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "error": {
            "code": "852126",
            "message": "string"
          },
          "state": "string"
        }
      ]
    },
    "interconnect": {
      "adapter": "MVIA-RDMA",
      "state": "string"
    },
    "partners": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "ports": [
      {
        "number": 0,
        "state": "active"
      }
    ],
    "takeover": {
      "failure": {
        "code": 852130,
        "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
      },
      "state": "failed"
    },
    "takeover_check": {
      "reasons": [
        "string"
```

```
      ]
    },
    "type": "string"
  },
  "hw_assist": {
    "status": {
      "local": {
        "ip": "string",
        "state": "string"
      },
      "partner": {
        "ip": "string",
        "state": "string"
      }
    }
  },
  "location": "rack 2 row 5",
  "management_interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "membership": "string",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "processor_utilization": 13,
    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "metrocluster": {
    "ports": [
```

```
      {
        "name": "e1b"
      }
    ],
    "type": "string"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvlog": {
    "backing_type": "string",
    "swap_mode": "string"
  },
  "nvram": {
    "battery_state": "string",
    "id": 0
  },
  "owner": "Example Corp",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "api_service": {
      "port": 0
    },
    "auto_config": {
      "ipv4_subnet": "ipv4_mgmt",
      "ipv6_subnet": "ipv6_mgmt"
    },
    "backup": {
      "state": "string",
      "version": "11.6"
    },
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "255.255.0.0",
      "setup_state": "string"
    },
    "ipv6_interface": {
      "address": "fd20:8b1e:b255:5011:10:141:4:97",
      "gateway": "fd20:8b1e:b255:5011:10::1",
      "link_local_ip": "FE80::/10",
      "netmask": 64,
      "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
      "setup_state": "string"
    },
    "last_update_state": "string",
```

```
      "link_status": "string",
      "mac_address": "string",
      "primary": {
        "state": "string",
        "version": "11.6"
      },
      "ssh_info": {
        "allowed_addresses": [
          "10.10.10.7/24"
        ]
      },
      "state": "string",
      "type": "string"
    },
    "snaplock": {
      "compliance_clock_time": "2018-06-04 15:00:00 -0400"
    },
    "state": "string",
    "statistics": {
      "processor_utilization_base": 12345123,
      "processor_utilization_raw": 13,
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "storage_configuration": "string",
    "system_aggregate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "system_id": 92027651,
    "system_machine_type": "7Y56-CTOWW1",
    "uptime": 300536,
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
    "vendor_serial_number": 791603000068,
    "version": {
      "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
      "generation": 9,
      "major": 4,
      "minor": 0
    },
    "vm": {
```

```
    "provider_type": "string"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.

Name	Type	Description
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	local	
partner	partner	

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

management_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

Name	Type	Description
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.

Name	Type	Description
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.

Name	Type	Description
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP. • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true
backup	backup	Provides the properties of the service processor backup partition.
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true".
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
ipv6_interface	ipv6_interface	Object to setup an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	

Name	Type	Description
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.

Name	Type	Description
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update node information

PATCH `/cluster/nodes/{uuid}`

Introduced In: 9.6

Updates the node information or performs shutdown/reboot actions on a node.

Related ONTAP commands

- `cluster ha modify`
- `storage failover modify`
- `system node modify`
- `system node reboot`
- `system node power off`
- `system node power on`
- `system service-processor network modify`
- `system service-processor reboot-sp`
- `system service-processor image modify`
- `system service-processor network auto-configuration enable`
- `system service-processor network auto-configuration disable`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid

Name	Type	In	Required	Description
action	string	query	False	The shutdown action shuts the node down and transfers storage control to its HA group if storage failover is enabled. The reboot action reboots the node and transfers storage control to its HA group if storage failover is enabled. The giveback action transfers storage control back to the owner from its HA group. The "power_off" action shuts the node down with the assistance of the service processor. The "power_on" action restores power to the node with the assistance of the service processor. • enum: ["shutdown", "reboot", "giveback", "power_off", "power_on", "takeover_check"]
shutdown_reboot_reason	string	query	False	Indicates the reason for the reboot or shutdown. This only applies when an action of reboot or shutdown is provided.

Name	Type	In	Required	Description
allow_data_outage	boolean	query	False	This only applies when an action of reboot or shutdown is provided. It allows storage failover to be bypassed along with any failures related to maintaining quorum in the cluster. • Default value:
service_processor.firmware_image	string	query	False	Service processor image to boot with after a reboot. • Introduced in: 9.10 • enum: ["primary", "backup"]
service_processor.action	string	query	False	Action used to reboot the service processor (SP). • Introduced in: 9.10 • enum: ["reboot"]
allow_version_mismatch	boolean	query	False	Applies only when a reboot action is provided. It allows storage failover to be bypassed along with any failures related to software version mismatch. • Introduced in: 9.12 • Default value:

Name	Type	In	Required	Description
override_vetoes	boolean	query	False	Applies only when a giveback action is provided. If giveback is vetoed, you must check the EMS messages to determine the cause. Depending on the reason or reasons, you can decide whether you can safely override the vetoes. • Introduced in: 9.13 • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	
system_machine_type	string	OEM system machine type.

Name	Type	Description
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

Example request


```
{
  "anti_ransomware_version": "1.0",
  "cluster_interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    },
    "flash_cache": [
      {
        "capacity": 1024000000000,
        "device_id": 0,
        "firmware_file": "X9170_O000Z6300NVM",
        "firmware_version": "NA05",
        "hardware_revision": "A1",
        "model": "X1970A",
        "part_number": "119-00207",
        "serial_number": "A22P5061550000187",
        "slot": "6-1",
        "state": "string"
      }
    ],
    "frus": [
```

```
      {
        "id": "string",
        "state": "string",
        "type": "string"
      }
    ],
    "memory_size": 1024000000,
    "over_temperature": "string"
  },
  "date": "2019-04-17 11:49:26 -0400",
  "external_cache": {
    "is_enabled": 1,
    "is_hya_enabled": 1,
    "is_rewarm_enabled": 1
  },
  "external_cache_bypass": {
    "enabled": 1,
    "large_read_ops_allow_percent": 100,
    "reset": 1
  },
  "ha": {
    "giveback": {
      "failure": {
        "code": 852126,
        "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
      },
      "state": "failed",
      "status": [
        {
          "aggregate": {
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "error": {
            "code": "852126",
            "message": "string"
          },
          "state": "string"
        }
      ]
    },
    "interconnect": {
      "adapter": "MVIA-RDMA",
      "state": "string"
    },
```

```
    "partners": [
      {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "ports": [
      {
        "number": 0,
        "state": "active"
      }
    ],
    "takeover": {
      "failure": {
        "code": 852130,
        "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
      },
      "state": "failed"
    },
    "takeover_check": {
      "reasons": [
        "string"
      ]
    },
    "type": "string"
  },
  "location": "rack 2 row 5",
  "management_interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "membership": "string",
  "metrocluster": {
    "ports": [
      {
        "name": "e1b"
      }
    ],
    "type": "string"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvlog": {
```

```
      "backing_type": "string",
      "swap_mode": "string"
    },
    "nvram": {
      "battery_state": "string",
      "id": 0
    },
    "owner": "Example Corp",
    "serial_number": "4048820-60-9",
    "service_processor": {
      "api_service": {
        "port": 0
      },
      "auto_config": {
        "ipv4_subnet": "ipv4_mgmt",
        "ipv6_subnet": "ipv6_mgmt"
      },
      "backup": {
        "state": "string",
        "version": "11.6"
      },
      "firmware_version": "string",
      "ipv4_interface": {
        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "255.255.0.0",
        "setup_state": "string"
      },
      "ipv6_interface": {
        "address": "fd20:8b1e:b255:5011:10:141:4:97",
        "gateway": "fd20:8b1e:b255:5011:10::1",
        "link_local_ip": "FE80::/10",
        "netmask": 64,
        "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
        "setup_state": "string"
      },
      "last_update_state": "string",
      "link_status": "string",
      "mac_address": "string",
      "primary": {
        "state": "string",
        "version": "11.6"
      },
      "ssh_info": {
        "allowed_addresses": [
          "10.10.10.7/24"
```

```
      ]
    },
    "state": "string",
    "type": "string"
  },
  "snaplock": {
    "compliance_clock_time": "2018-06-04 15:00:00 -0400"
  },
  "state": "string",
  "storage_configuration": "string",
  "system_aggregate": {
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "vm": {
    "provider_type": "string"
  }
}
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```


Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
852046	HA partner node is not running to do takeover.
852115	The reboot/shutdown is prevented because LIFs cannot be moved away from the node.
852269	This operation is not supported on this platform.
3604514	A reboot or shutdown request is already in progress.
3604515	Reboot or shutdown of all nodes results in data service failure and client disruption for the entire cluster. Use "allow-data-outage=true" to bypass this check.
9240591	The name is not valid. The name is already in use by a cluster node, SVM, or it is the name of the local cluster.
9240606	The reboot/shutdown is prevented due to quorum warnings.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

The cluster network IP address of the node to be added.

ip

IP information

cluster_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

cpu

CPU information.

Name	Type	Description
count	integer	Number of CPUs on the node.

Name	Type	Description
firmware_release	string	Firmware release number. Defined by the CPU manufacturer.
processor	string	CPU type on the node.

message

Name	Type	Description
code	string	Error code describing the current condition of chassis fans.
message	string	Message describing the current condition of chassis fans. It is only of use when `failed_fan.count` is not zero.

failed_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	message	

message

Name	Type	Description
code	string	Error code describing the current condition of power supply.
message	string	Message describing the state of any power supplies that are currently degraded. It is only of use when `failed_power_supply.count` is not zero.

failed_power_supply

Name	Type	Description
count	integer	Number of failed power supply units.
message	message	

flash_cache

Name	Type	Description
capacity	integer	Size in bytes
device_id	integer	
firmware_file	string	
firmware_version	string	
hardware_revision	string	
model	string	
part_number	string	
serial_number	string	
slot	string	
state	string	

frus

Name	Type	Description
id	string	
state	string	
type	string	

controller

Controller information

Name	Type	Description
board	string	Type of the system board. This is defined by vendor.
cpu	cpu	CPU information.
failed_fan	failed_fan	
failed_power_supply	failed_power_supply	

Name	Type	Description
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

external_cache

Cache used for buffer management.

Name	Type	Description
is_enabled	boolean	Indicates whether the external cache is enabled.
is_hya_enabled	boolean	Indicates whether HyA caching is enabled.
is_rewarm_enabled	boolean	Indicates whether rewarm is enabled.
pcs_size	integer	PCS size in gigabytes.

external_cache_bypass

External cache bypass management.

Name	Type	Description
enabled	boolean	Indicates whether external cache bypass is enabled.
large_read_ops_allow_percent	integer	External cache bypass allowed operations percentage for large reads.

Name	Type	Description
reset	boolean	Initiates an external cache bypass threshold reset action.

failure

Indicates the failure code and message. This property is not supported on the ASA r2 platform.

Name	Type	Description
code	integer	Message code
message	string	Detailed message based on the state.

aggregate

Aggregate name and UUID.

Name	Type	Description
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

Name	Type	Description
code	string	Message code.
message	string	Detailed message based on the state.

status

Name	Type	Description
aggregate	aggregate	Aggregate name and UUID.
error	error	Indicates the failed aggregate giveback code and message.

Name	Type	Description
state	string	Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks).

giveback

Represents the state of the node that is giving storage back to its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	
status	array[status]	Giveback status of each aggregate. This property is not supported on the ASA r2 platform.

interconnect

Name	Type	Description
adapter	string	HA interconnect device name.
state	string	Indicates the HA interconnect status.

partners

Name	Type	Description
name	string	
uuid	string	

ports

Name	Type	Description
number	integer	HA port number
state	string	HA port state: • *down* - Logical HA link is down. • *initialized* - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • *armed* - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • *active* - Logical HA link is active. • *reserved* - Logical HA link is active, but the physical link is down.

takeover

This represents the state of the node that is taking over storage from its HA partner.

Name	Type	Description
failure	failure	Indicates the failure code and message. This property is not supported on the ASA r2 platform.
state	string	

takeover_check

The takeover check response.

Name	Type	Description
reasons	array[string]	Reasons why the takeover is not possible.
takeover_possible	boolean	Indicates whether the takeover is possible.

ha

Name	Type	Description
auto_giveback	boolean	Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
enabled	boolean	Specifies whether or not storage failover is enabled.
giveback	giveback	Represents the state of the node that is giving storage back to its HA partner.
interconnect	interconnect	
partners	array[partners]	Nodes in this node's High Availability (HA) group.
ports	array[ports]	
takeover	takeover	This represents the state of the node that is taking over storage from its HA partner.
takeover_check	takeover_check	The takeover check response.
type	string	Type of storage.

local

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.
state	string	The hardware assist monitor status.

partner

Name	Type	Description
ip	string	The hardware assist IP address.
port	integer	The hardware assist port.

Name	Type	Description
state	string	The hardware assist monitor status.

status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.

hw_assist

The hardware assist information.

Name	Type	Description
status	status	

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

management_interfaces

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

metric

CPU performance for the nodes.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

ports

Name	Type	Description
name	string	

metrocluster

Metrocluster

Name	Type	Description
custom_vlan_capable	boolean	Indicates whether the MetroCluster over IP platform supports custom VLAN IDs.
ports	array[ports]	MetroCluster over IP ports.
type	string	The Metrocluster configuration type

nvlog

Non-volatile write log settings.

Name	Type	Description
backing_type	string	Indicates the current NVLog journal backing type.
swap_mode	string	Indicates the current NVLog journal swap mode.

nvram

Name	Type	Description
battery_state	string	Specifies status of the NVRAM battery. Possible values: • *battery_ok* • *battery_partially_discharged* • *battery_fully_discharged* • *battery_not_present* • *battery_near_end_of_life* • *battery_at_end_of_life* • *battery_unknown* • *battery_over_charged* • *battery_fully_charged*
id	integer	Vendor specific NVRAM ID of the node.

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

Name	Type	Description
enabled	boolean	Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts SP API service access to cluster nodes only. By default, limit_access is set to true.
port	integer	Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used.

auto_config

Provides the properties of the service processor auto configuration.

Name	Type	Description
ipv4_subnet	string	Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.
ipv6_subnet	string	Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config.

backup

Provides the properties of the service processor backup partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the backup partition.
state	string	Status of the backup partition.
version	string	Firmware version of the backup partition.

ipv4_interface

Object to set up an interface along with its default router.

Name	Type	Description
address	string	IPv4 address
enabled	boolean	Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true".
gateway	string	The IPv4 address of the default router.
netmask	string	Input as IPv4 mask (255.255.0.0). Output is always the netmask length.
setup_state	string	Indicates the setup state of the interface.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
enabled	boolean	Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true".

Name	Type	Description
gateway	string	The IPv6 address of the default router.
is_ipv6_ra_enabled	boolean	Indicates whether IPv6 RA is enabled.
link_local_ip	string	Link local IP address.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.
router_ip	string	Router assigned IP address.
setup_state	string	Indicates the setup state of the interface.

primary

Provides the properties of the service processor primary partition.

Name	Type	Description
is_current	boolean	Indicates whether the service processor is currently booted from the primary partition.
state	string	Status of the primary partition.
version	string	Firmware version of the primary partition.

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

Name	Type	Description
allowed_addresses	array[string]	Allowed IP addresses

web_service

Provides the properties of SP or BMC web service.

Name	Type	Description
enabled	boolean	Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection.
limit_access	boolean	Restricts web service access to cluster nodes only. By default, limit_access is set to true.

service_processor

Name	Type	Description
api_service	api_service	Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.
auto_config	auto_config	Provides the properties of the service processor auto configuration.
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP. • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true
backup	backup	Provides the properties of the service processor backup partition.
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true".

Name	Type	Description
firmware_version	string	The version of firmware installed.
ipv4_interface	ipv4_interface	Object to set up an interface along with its default router.
ipv6_interface	ipv6_interface	Object to setup an interface along with its default router.
is_ip_configured	boolean	Indicates whether the service processor network is configured.
last_update_state	string	Provides the "update status" of the last service processor update.
link_status	string	
mac_address	string	
primary	primary	Provides the properties of the service processor primary partition.
ssh_info	ssh_info	Service processor SSH allowed IP address configuration applied across the cluster.
state	string	
type	string	
web_service	web_service	Provides the properties of SP or BMC web service.

snaplock

SnapLock-related properties.

Name	Type	Description
compliance_clock_time	string	SnapLock compliance clock time.

statistics

Raw CPU performance for the nodes.

Name	Type	Description
processor_utilization_base	integer	Base counter for CPU Utilization.

Name	Type	Description
processor_utilization_raw	integer	Raw CPU utilization for the node. The change in this value over time should be divided by corresponding change in processor_utilization_base, then multiplied by 100 to calculate the percentage CPU utilization for the node. For example: processor_utilization_raw_t2 - processor_utilization_raw_t1) / (processor_utilization_base_t2 - processor_utilization_base_t1 * 100.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

system_aggregate

Aggregate

Name	Type	Description
name	string	

Name	Type	Description
uuid	string	

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

vm

Name	Type	Description
provider_type	string	Cloud provider where the VM is hosted.

node

Complete node information

Name	Type	Description
anti_ransomware_version	string	Anti ransomware version.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information

Name	Type	Description
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
external_cache	external_cache	Cache used for buffer management.
external_cache_bypass	external_cache_bypass	External cache bypass management.
ha	ha	
is_spares_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	Possible values: • *available* - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for *available* to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • *joining* - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • *member* - Nodes that are members have successfully joined the cluster.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
nvlog	nvlog	Non-volatile write log settings.
nvram	nvram	
owner	string	Owner of the node.
serial_number	string	
service_processor	service_processor	
snaplock	snaplock	SnapLock-related properties.

Name	Type	Description
state	string	State of the node: • *up* - Node is up and operational. • *booting* - Node is booting up. • *down* - Node has stopped or is dumping core. • *taken_over* - Node has been taken over by its HA partner and is not yet waiting for giveback. • *waiting_for_giveback* - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • *degraded* - Node has one or more critical services offline. • *unknown* - Node or its HA partner cannot be contacted and there is no information on the node's state.
storage_configuration	string	The storage configuration in the system. Possible values: • *mixed_path* • *single_path* • *multi_path* • *tri_path* • *quad_path* • *mixed_path_ha* • *single_path_ha* • *multi_path_ha* • *tri_path_ha* • *quad_path_ha* • *unknown* • *virtual*
system_aggregate	system_aggregate	Aggregate
system_id	string	

Name	Type	Description
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
vm	vm	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve node historical performance metrics

GET `/cluster/nodes/{uuid}/metrics`

Introduced In: 9.8

Retrieves historical performance metrics for a node.

Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration
processor_utilization	integer	query	False	Filter by processor_utilization
status	string	query	False	Filter by status
uuid	string	path	True	Unique identifier of the node.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "processor_utilization": 13,
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

records

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
processor_utilization	integer	Average CPU Utilization for the node

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Cluster NTP

Cluster NTP endpoint overview

Overview

ONTAP uses the Network Time Protocol (NTP) for world clock time synchronization of the cluster. Some functional services
require the time to be correct to within one second for all the nodes in the cluster.

The success and speed of this synchronization depends on the number, alignment, and consistent network latency of external
time servers. It is a best practice to configure ONTAP with four independent external time servers.

To aid set up, the Pre-Cluster API of POST /cluster supports a list of NTP time servers
using either the host name, IPv4 address, or IPv6 address.

You can enhance time security by acquiring private keys from external time servers, recording those keys and configuring the entries that match the external time servers to use those keys.

To use NTP symmetric authentication keys (keys), the shared private key must be recorded
first using the /cluster/ntp/keys API associated with the server and enabled to be used.

APIs

There are three sets of APIs. The most basic set is part of the /api/cluster APIs, in which a set of NTP servers are provided.
The next two sets are used to manage the NTP servers in more detail and optionally record keys to enable NTP
symmetric authentication.

/api/cluster

More details can be found under the documentation for /api/cluster . This API supports a list of NTP servers to start with. It does not take any individual configuration values for the NTP servers themselves.

/api/cluster/ntp/servers

You can use this API for a more detailed configuration of NTP servers. You must use this API to set and enable NTP symmetric authentication keys.

/api/cluster/ntp/keys

You can use this API to manage shared NTP symmetric keys that are provided by the remote NTP time server by using the key identifier (ID), type of key, and the private shared key.

Manage cluster NTP keys

Cluster NTP keys endpoint overview

Overview

You can configure NTP to use shared private keys between ONTAP and trusted external NTP time servers.

You acquire the keys from the external NTP time servers and individual entries created for each unique key. You can use the /cluster/ntp/servers API to associate a key with an external NTP time server used by ONTAP and enable authentication.

Fields used for adding an NTP shared key

The required fields are:

- `id`
- `digest_type`
- `secret_key`

Example

```
# Body
create_ntp_key.txt(body):
{
"id": 10,
"digest_type": "sha1",
"value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/keys" -d
"@create_ntp_key.txt"
```

Retrieve the NTP symmetric authentication keys

GET `/cluster/ntp/keys`

Introduced In: 9.7

Retrieves the collection of NTP symmetric authentication keys known by ONTAP that are uniquely indexed by an identifier.

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- DOC /cluster/ntp/keys

Parameters

Name	Type	In	Required	Description
value	string	query	False	Filter by value
digest_type	string	query	False	Filter by digest_type
id	integer	query	False	Filter by id • Max value: 65535 • Min value: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[ntp_key]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "digest_type": "sha1",
      "id": 10,
      "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ntp_key

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NTP symmetric authentication key entry

POST `/cluster/ntp/keys`

Introduced In: 9.7

Creates an NTP symmetric authentication key entry including the type of key using an unused identifier or index number (ID).

Required properties

- `id` - Shared symmetric key number (ID).
- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key create`

Learn more

- DOC /cluster/ntp/keys

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

Example request

```
{
  "digest_type": "sha1",
  "id": 10,
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097187	Invalid value for an NTP symmetric authentication key. A SHA1 key must be exactly 40 hexadecimal digits.
2097189	Too many NTP keys have been configured.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key

Name	Type	Description
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an NTP key

DELETE `/cluster/ntp/keys/{id}`

Introduced In: 9.7

Deletes an NTP key.

Related ONTAP commands

- `cluster time-service ntp key delete`

Learn more

- DOC /cluster/ntp/keys

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097186	The key cannot be deleted because it is being used by an NTP server.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve NTP symmetric authentication key details

GET `/cluster/ntp/keys/{id}`

Introduced In: 9.7

Retrieves the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- DOC /cluster/ntp/keys

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": 10,
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update NTP symmetric authentication key details

PATCH `/cluster/ntp/keys/{id}`

Introduced In: 9.7

Updates the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Required properties

- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key modify`

Learn more

- DOC /cluster/ntp/keys

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier

Request Body

Name	Type	Description
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

Example request

```
{
  "digest_type": "sha1",
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097187	An invalid SHA1 key was provided.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key

Name	Type	Description
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
value	string	A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters. Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage cluster NTP servers

Cluster NTP servers endpoint overview

Overview

You can use this API to add external NTP servers to a cluster, update the configuration, use NTP keys, and retrieve the
current NTP server configuration.

Adding an NTP server to a cluster

To add an NTP server to a cluster, issue a POST /cluster/ntp/servers request.

Fields used for adding an NTP server

Except for the name of the NTP server (host name or IP address), which is specified by the server, all fields are optional:

- `version`
- `key`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Examples

Adding an NTP server

```
# Body
add_ntp_server.txt(body):
{
"server": "time.nist.gov"
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_ntp_server.txt"
```

Adding an NTP server with an authentication key

```
# Body
add_authenticated_ntp_server.txt(body):
{
"server": "time.nist.gov",
"key": { "id": 10 }
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_authenticated_ntp_server.txt"
```

Enabling a previously configured shared key (ID, type, and value) for an NTP server

A combination of key number or identifier (ID), type of key, and shared key value is created with /api/cluster/ntp/keys.
This operation will validate the NTP authentication works.

```
# Body
enable_shared_key.txt(body):
{
"key": { "id": 10 },
"authentication_enabled": true
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/ntp/servers/time.nist.gov" -d
"@enable_shared_key.txt"
```

Retrieve external NTP time servers

GET `/cluster/ntp/servers`

Introduced In: 9.7

Retrieves the collection of external NTP time servers ONTAP uses for time adjustment and correction.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
key.id	integer	query	False	Filter by key.id • Max value: 65535 • Min value: 1
authentication_enabled	boolean	query	False	Filter by authentication_enabled
version	string	query	False	Filter by version
server	string	query	False	Filter by server
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[ntp_server]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_enabled": 1,
      "key": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 10
      },
      "server": "time.nist.gov",
      "version": "auto"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.

Name	Type	Description
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Validate an external NTP time server

POST `/cluster/ntp/servers`

Introduced In: 9.7

Validates the provided external NTP time server for usage and configures ONTAP so that all nodes in the cluster use it.
The required fields are:

- `server`

Default property values

If not specified in POST, the following default property values are assigned:

- `version` - auto
- `key` - not set

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Related ONTAP commands

- `cluster time-service ntp server create`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "authentication_enabled": 1,
  "key": {
    "id": 10
  },
  "server": "time.nist.gov",
  "version": "auto"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097163	NTP server IPv4 address was invalid.
2097164	NTP server IPv6 address was invalid.
2097165	Cannot resolve NTP server name.
2097166	NTP server address query returned no valid IP addresses.
2097167	Failed to connect to NTP server.
2097168	Unable to query NTP server.
2097169	NTP server provided was not synchronized with a clock or another NTP server.
2097174	NTP server provided had too high of root distance.
2097177	NTP server provided an invalid stratum.
2097179	Too many NTP servers have been configured.
2097181	NTP server address was invalid. It is a special purpose address such as loopback, multicast, or broadcast address.
2097182	NTP server address was invalid. The address is neither an IPv4 or IPv6.
2097183	NTP symmetric key authentication cannot be used for a node not in a cluster.
2097185	NTP key authentication failed for the provided key.
2097193	An unknown NTP key was provided.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key_reference

Name	Type	Description
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an external NTP server

DELETE `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Deletes an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server delete`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	Server address or host name

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an external NTP server configuration

GET `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Retrieves the configuration of an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	NTP server host name, IPv4, or IPv6 address.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 10
  },
  "server": "time.nist.gov",
  "version": "auto"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an NTP server configuration after validation

PATCH `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Updates the configuration of an NTP server used by the ONTAP cluster after validation.
Patchable fields are:

- `version`
- `key.id`
- `authentication_enabled`

If `authentication_enabled` is modified to `false`, the associated NTP key is removed from the server instance.
If `authentication_enabled` is modified to `true`, you must provide an NTP key ID in the PATCH body.

Related ONTAP commands

- `cluster time-service ntp server modify`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	Server address or host name

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "authentication_enabled": 1,
  "key": {
    "id": 10
  },
  "version": "auto"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097163	NTP server address was invalid.
2097164	NTP server address was invalid.

Error Code	Description
2097165	Could not resolve NTP server hostname.
2097166	NTP server address query returned no valid IP addresses.
2097167	Failed to connect to NTP server.
2097169	NTP server provided was not synchronized.
2097174	NTP server provided had too high of root distance.
2097177	NTP server provided had an invalid stratum.
2097181	NTP server address was invalid.
2097182	NTP server address was invalid.
2097183	NTP symmetric key authentication cannot be used for a node not in a cluster.
2097185	NTP key authentication failed for the provided key.
2097188	An invalid key identifier was provided. Identifiers must be in the range from 1 to 65535.
2097193	An unknown key was provided.
2097194	The field "authentication_enabled" cannot be false when the field NTP key is given.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key_reference

Name	Type	Description
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster peers

Cluster peers endpoint overview

Overview

Cluster peering allows administrators of ONTAP systems to establish relationships between two or more independent clusters. When a relationship exists between two clusters, the clusters can exchange user data and configuration information, and coordinate operations. The /cluster/peers endpoint supports create, get, modify, and delete operations using GET, PATCH, POST and DELETE HTTP requests.

Create a cluster peer

You can set up a new cluster peer relationship by issuing a POST request to /cluster/peers. Parameters in the POST body define the settings of the peering relationship. A successful POST request that succeeds in creating a peer returns HTTP status code "201", along with the details of the created peer, such as peer UUID, name, and authentication information. A failed POST request returns an HTTP error code along with a message indicating the reason for the error. This can include malformed requests and invalid operations.

Examples of creating cluster peers

Creating a cluster peer request with an empty request to accept the defaults

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "86de6c46-bdad-11eb-83cd-005056bb267e",
    "name": "Clus_fghf",
    "authentication": {
      "passphrase": "pLznaom1ctesJFq4kt5Qfghf",
      "expiry_time": "2021-05-25T20:04:15-04:00"
    },
    "ip_address": "0.0.0.0",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/86de6c46-bdad-11eb-83cd-005056bb267e"
      }
    }
  }
]
}
```

Creating a cluster peer request with a system-generated passphrase that will expire on 05/26/2021 at 12:34:56

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"authentication":
{"expiry_time": "05/26/2021 12:34:56", "generate_passphrase": true}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "14c817c7-bdad-11eb-83cd-005056bb267e",
    "name": "Clus_F6ht",
    "authentication": {
      "passphrase": "dZNOKkpVfntNZHf3MjpNF6ht",
      "expiry_time": "2021-05-26T12:34:56-04:00"
    },
    "ip_address": "0.0.0.0",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/14c817c7-bdad-11eb-83cd-005056bb267e"
      }
    }
  }
]
}
```

Creating a cluster peer request with a peer address and the generated passphrase is returned in the response

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"remote":
{"ip_addresses": ["1.2.3.4"]}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
    "name": "",
    "authentication": {
      "passphrase": "yDhdOteVGEOhkeXF+DJYwDro",
      "expiry_time": "2021-05-25T20:28:12-04:00"
    },
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
      }
    }
  }
]
}
```

Creating a cluster peer request with a peer name and the generated passphrase is returned in the response

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"name":
"cp_xyz123", "authentication": {"generate_passphrase": true}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "125f8dc6-bdb1-11eb-83cd-005056bb267e",
    "name": "cp_xyz123",
    "authentication": {
      "passphrase": "eeGTerZlh2qSAt2akpYEcM1c",
      "expiry_time": "2021-05-25T20:29:38-04:00"
    },
    "ip_address": "1.2.3.5",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/125f8dc6-bdb1-11eb-83cd-005056bb267e"
      }
    }
  }
]
}
```

Creating a cluster peer request with a name, a peer address, and a passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"name":
"cp_xyz123", "remote": {"ip_addresses": ["1.2.3.4"]}, "authentication":
{"passphrase": "xyz12345"}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
    "authentication": {
      "expiry_time": "2021-05-25T20:32:49-04:00"
    },
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
      }
    }
  }
]
}
```

Creating a cluster peer request with a proposed encryption protocol

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"encryption":
{"proposed": "tls-psk"}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "b33a23a6-bdb1-11eb-83cd-005056bb267e",
    "name": "Clus_Pslc",
    "authentication": {
      "passphrase": "Gy8SqsXVhcUkS1AfepH7Pslc",
      "expiry_time": "2021-05-25T20:34:07-04:00"
    },
    "ip_address": "1.2.3.5",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b33a23a6-bdb1-11eb-83cd-005056bb267e"
      }
    }
  }
]
}
```

Creating local intercluster LIFs

The local cluster must have an intercluster LIF on each node for the correct operation of cluster peering. If no local intercluster LIFs exist, you can optionally specify LIFs to be created for each node in the local cluster. These local interfaces, if specified, are created on each node before proceeding with the creation of the cluster peering relationship. Cluster peering relationships are not established if there is an error preventing the LIFs from being created.
After local interfaces have been created, do not specify them for subsequent cluster peering relationships.

Local LIF creation fields

- local_network.ip_addresses - List of IP addresses to assign, one per node in the local cluster.
- local_network.netmask - IPv4 mask or subnet mask length.
- local_network.broadcast_domain - Broadcast domain that is in use within the IPspace.
- local_network.gateway - The IPv4 or IPv6 address of the default router.

Additional information on network routes

When creating LIFs, the network route discovery mechanism might take additional time (1-5 seconds) to become visible in the network outside of the cluster. This delay in publishing the routes might cause an initial cluster peer "create" request to fail. This error disappears with a retry of the same request.

This example shows the POST body when creating four intercluster LIFs on a 4-node cluster before creating a cluster peer relationship.

```
# The API:
/api/cluster/peers

# The call:
cluster_peer_4_node.txt:
{
  "local_network":
  {
      "interfaces": [
          {"ip_address":"1.2.3.4"},
          {"ip_address":"1.2.3.5"},
          {"ip_address":"1.2.3.6"}
      ],
      "netmask": "255.255.0.0",
      "broadcast_domain": "Default",
      "gateway": "1.2.0.1"
  },
  "remote": {"ip_addresses": ["1.2.9.9"]},
  "authentication": {"passphrase": "xyz12345"}
}
curl -X POST "https://<mgmt-ip>/api/cluster/peers" -d
"@cluster_peer_4_node.txt"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
    "local_network": {
      "interfaces": [
        {
          "ip_address": "1.2.3.4"
        },
        {
          "ip_address": "1.2.3.5"
        },
        {
```

```
          "ip_address": "1.2.3.6"
        }
      ]
    },
    "authentication": {
      "expiry_time": "2021-05-25T21:28:26-04:00"
    },
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
      }
    }
  }
]
}
```


Examples of retrieving existing cluster peers

You can retrieve peers in a cluster by issuing a GET request to /cluster/peers. It is also possible to retrieve a specific peer when qualified by its UUID to /cluster/peers/{uuid}.
A GET request might have no query parameters or a valid cluster UUID. The former retrieves all records while the latter retrieves the record for the cluster peer with that UUID.

Retrieving all cluster peer relationships, both established and pending

```
# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers'

# The response:
{
"records": [
  {
    "uuid": "a6001076-bdb2-11eb-83cd-005056bb267e",
    "name": "Clus_bH6l",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/a6001076-bdb2-11eb-83cd-005056bb267e"
      },
      "interfaces": {
        "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
      }
    }
  },
  {
    "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
    "name": "remote-cluster",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
      },
      "interfaces": {
        "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/peers"
  }
}
}
```

Retrieving all cluster peer relationships which are not in an available state

```
# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers?status.state=!available'

# The response:
{
"records": [
  {
    "uuid": "a6001076-bdb2-11eb-83cd-005056bb267e",
    "name": "Clus_bH6l",
    "status": {
      "state": "unidentified"
    },
    "_links": {
      "self": {
        "href": "/api/cluster/peers/a6001076-bdb2-11eb-83cd-005056bb267e"
      },
      "interfaces": {
        "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/cluster/peers?status.state=!available"
  }
}
}
```

Retrieving information about a single cluster peer relationship

```
# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-
005056bb0af1'
```

```
# The response:
{
"uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
"name": "remote-cluster",
"version": {
  "full": "NetApp Release 9.10.1: Tue May 25 08:08:44 UTC 2021",
  "generation": 9,
  "major": 10,
  "minor": 1
},
"status": {
  "state": "available",
  "update_time": "2021-05-25T19:38:55-04:00"
},
"ipspace": {
  "uuid": "0bac5ced-a911-11eb-83cd-005056bb267e",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/0bac5ced-a911-11eb-83cd-005056bb267e"
    }
  }
},
"remote": {
  "name": "remote-cluster",
  "serial_number": "1-80-000011",
  "ip_addresses": [
    "1.2.3.4"
  ]
},
"authentication": {
  "in_use": "ok",
  "state": "ok"
},
"encryption": {
  "state": "tls_psk"
},
"_links": {
  "self": {
    "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
  },
  "interfaces": {
    "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
```

```
  }
}
}
```

Examples of updating an existing cluster peer

You can update a cluster peer relationship by issuing a PATCH request to /cluster/peers/{uuid}. As in the CLI mode, you can toggle the proposed encryption protocol, update the passphrase, or specify a new set of stable addresses. All PATCH requests take the parameters that are to be updated in the request body. If generate_passphrase is "true", the passphrase is returned in the PATCH response.

Updating the proposed encryption protocol from tls-psk to none

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-
812c-005056bb0af1' -d '{"authentication": {"passphrase": "xyz12345",
"in_use": "ok"}, "encryption": {"proposed": "none"}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "authentication": {
      "passphrase": "xyz12345",
      "in_use": "ok"
    },
    "encryption": {
      "proposed": "none"
    }
  }
]
}
```

Updating the passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-
812c-005056bb0af1' -d '{"authentication": {"passphrase": "xyz12345",
"in_use": "ok"}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "authentication": {
      "passphrase": "xyz12345",
      "in_use": "ok"
    }
  }
]
}
```

Setting an auto-generated passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-
812c-005056bb0af1' -d '{"authentication": {"generate_passphrase": true,
"in_use": "ok"}}'

# The response:
{
"num_records": 1,
"records": [
  {
    "authentication": {
      "passphrase": "GpxQquKVLgh2skH+hQ4jRiSf",
      "expiry_time": "2025-03-20T12:11:20-04:00",
      "in_use": "ok"
    }
  }
]
}
```

Updating remote IP addresses

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-
812c-005056bb0af1' -d '{"remote": {"ip_addresses": ["1.2.3.6"]}}'

# The response:
{}
```

An example of deleting an existing cluster peer

You can delete a cluster peer using the HTTP DELETE request.

Deleting a peer with peer UUID "8becc0d4-c12c-11e8-9ceb-005056bbd143"

```
# The API:
/api/cluster/peers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-
812c-005056bb0af1"

# The response:
{}
```

Retrieve cluster peers

GET `/cluster/peers`

Introduced In: 9.6

Retrieves the collection of cluster peers.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cluster_peer]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "interfaces": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication": {
        "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
        "generate_passphrase": true,
        "in_use": "string",
        "passphrase": "string",
        "state": "string"
      },
      "encryption": {
        "proposed": "string",
        "state": "string"
      },
      "initial_allowed_svms": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      ],
      "ip_address": "10.10.10.7",
      "ipspace": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "cluster2",
      "peer_applications": [
        "snapmirror",
        "flexcache"
      ],
      "remote": {
        "ip_addresses": [
          "10.10.10.7"
        ],
        "name": "cluster2",
        "serial_number": "4048820-60-9"
      },
      "status": {
        "state": "available",
        "update_time": "2017-01-25 06:20:13 -0500"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "version": {
        "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
        "generation": 9,
        "major": 4,
        "minor": 0
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipspace

The IPspace of the local intercluster LIFs.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.

Name	Type	Description
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create a peering relationship

POST `/cluster/peers`

Introduced In: 9.6

Creates a peering relationship and, optionally, the IP interfaces it will use. There are two methods used to create a peering relationship:

- Provide a remote IP address - Used when creating a new cluster peer relationship with a specific remote cluster. This requires at least one remote intercluster IP address from the remote cluster.
- Do not provide a remote IP address - Used when the remote IP address is not provided and when the storage system is ready to accept peering requests from foreign clusters.

Required properties

- `remote.ip_addresses` - Addresses of the remote peers. The local peer must be able to reach and connect to these addresses for the request to succeed in creating a peer. Only required when creating a peering relationship by providing a remote IP address.
- Either set `generate_passphrase` to "true" or provide a passphrase in the body of the request. Only one of these options is required.

Recommended optional properties

- `name` - Name of the peering relationship or name of the remote peer.
- `passphrase` - User generated passphrase for use in authentication.
- `generate_passphrase` (true/false) - When "true", ONTAP automatically generates a passphrase to authenticate cluster peers.
- `ipspace` - IPspace of the local intercluster LIFs. Assumes Default IPspace if not provided.
- `initial_allowed_svms` - Local SVMs allowed to peer with the peer cluster's SVMs. Can be modified until the remote cluster accepts this cluster peering relationship.
- `local_network` - Fields to create a local intercluster LIF.
- `expiry_time` - Duration in ISO 8601 format for which the user-supplied or auto-generated passphrase is valid. Expiration time must not be greater than seven days into the future. ISO 8601 duration format is "PnDTnHnMnS" or "PnW" where n is a positive integer. The "nD", "nH", "nM" and "nS" fields can be dropped if zero. "P" must always be present and "T" must be present if there are any hours, minutes, or seconds fields.
- `encryption_proposed` (none/tls-psk) - Encryption mechanism of the communication channel between the two peers.

- `peer_applications` - SVM peering applications (SnapMirror, FlexCache or both) for which the SVM peering relationship is set up.

Additional information

As with creating a cluster peer through the CLI, the combinations of options must be valid in order for the create operation to succeed. The following list shows the combinations that will succeed and those that will fail:

- A passphrase only (fail)
- A peer IP address (fail)
- A passphrase with an expiration time > 7 days into the future (fail)
- A peer IP address and a passphrase (OK)
- generate_passphrase=true (OK)
- Any proposed encryption protocol (OK)
- An IPspace name or UUID (OK)
- A passphrase, peer IP address, and any proposed encryption protocol (OK)
- A non empty list of initial allowed SVM peer names or UUIDs. (OK)

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.

Name	Type	Description
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

Example request


```
{
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "ip_address": "10.10.10.7",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": [
      {
        "ip_address": "10.10.10.7"
      }
    ],
    "netmask": "255.255.0.0"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
```

```
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[cluster_peer]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "authentication": {
        "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
        "in_use": "string",
        "passphrase": "string",
        "state": "string"
      },
      "encryption": {
        "proposed": "string",
        "state": "string"
      },
      "initial_allowed_svms": [
        {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      ],
      "ip_address": "10.10.10.7",
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "local_network": {
        "broadcast_domain": "bd1",
        "gateway": "10.1.1.1",
        "interfaces": [
          {
            "ip_address": "10.10.10.7"
          }
        ],
        "netmask": "255.255.0.0"
      },
      "name": "cluster2",
      "peer_applications": [
        "snapmirror",
        "flexcache"
      ],
      "remote": {
        "ip_addresses": [
          "10.10.10.7"
        ],
```

```
        "name": "cluster2",
        "serial_number": "4048820-60-9"
      },
      "status": {
        "state": "available",
        "update_time": "2017-01-25 06:20:13 -0500"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966366	The system SVM of the cluster IPspace hosts cluster LIFs only.
4653058	Cannot peer with self.
4653075	Cannot peer with two clusters using the same cluster peer relationship name.
4653075	Cannot peer two clusters with the same name.
4653076	Cannot peer two clusters with the same UUID.
4653229	Value for "expiry_time" is obsolete.
4653236	The specified passphrase is too short.
4653365	IPspaces are unavailable with cluster peering: {ipspace}.
4653368	Invalid peer address passed in "ip_addresses": Verify that the peer address is correct, and then try the operation again.

Error Code	Description
4653419	An unencrypted peering relationship is not supported because the cluster peering policy requires the use of encryption.
4653708	The specified addresses must be of the same address family.
4656069	Specifying a passphrase without remote IP addresses is not supported.
4656070	The encryption protocol is meaningful only with authenticated cluster peer relationships.
4656071	Cannot peer with a cluster bearing the same name as the local cluster.
4656072	The name must conform to the same rules as a cluster name.
4656074	Cannot check whether all nodes of this cluster support encryption.
4656075	Cannot specify encryption: this operation requires an ECV of 9.6.0 or later.
4656077	Specify either remote IP addresses or generate_passphrase.
4656079	No cluster nodes were found. Check your cluster configuration.
4656081	Creating an intercluster LIF requires a list of local IP addresses.
4656085	Cannot create an intercluster LIF with an empty list of local IP addresses.
4656086	Creating an intercluster LIF requires a broadcast domain that is in use within the IPspace.
4656087	The number of local intercluster IP addresses must be less than or equal to the number of available nodes.
4656088	Found no ports matching the IPspace and the broadcast domain.
4656089	Found no matching entry for IPspace.
4656090	The given IPspace differs from the IPspace entry found.
4656091	Creating an intercluster LIF requires a subnet mask or a subnet mask length.
4656094	Found no ports to bind to intercluster LIFs. Check your network configuration.

Error Code	Description
4656095	The address family of the specified peer addresses is not valid in IPspace. Use /api/network/ip/interfaces/ to verify that required LIFs are present and operational on each cluster node.
4656096	Creating an intercluster LIF requires an IPv4 or IPv6 address of the default router.
4656100	Cannot use peer address "ip_addresses" because it is already in use on the local cluster. Use /api/network/ip/interfaces to view the address in use.
4656101	Cannot specify a remote IP that resolves to both IPv4 and IPv6. Specify an IPv4 or IPv6 address.
8847365	Unknown Host

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipspace

The IPspace of the local intercluster LIFs.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	

Name	Type	Description
update_time	string	The last time the state was updated.

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a cluster peer

DELETE `/cluster/peers/{uuid}`

Introduced In: 9.6

Deletes a cluster peer.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cluster peer relationship UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4653079	Unable to delete peer relationship.
4663070	Unable to delete cluster peer relationship due to an ongoing Vserver migration.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a cluster peer instance

GET `/cluster/peers/{uuid}`

Introduced In: 9.6

Retrieves a specific cluster peer instance.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cluster peer relationship UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	

Name	Type	Description
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example response


```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "generate_passphrase": true,
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "ip_address": "10.10.10.7",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
```

```
    "flexcache"
  ],
  "remote": {
    "ip_addresses": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipspace

The IPspace of the local intercluster LIFs.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a cluster peer instance

PATCH `/cluster/peers/{uuid}`

Introduced In: 9.6

Updates a cluster peer instance.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cluster peer relationship UUID

Request Body

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.

Name	Type	Description
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

Example request

```
{
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "ip_address": "10.10.10.7",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

Example response


```
{
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "ip_address": "10.10.10.7",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	SVM name does not exist.
4653061	The specified remote cluster is invalid.
4653218	An introductory RPC to the peer address failed to connect. Verify that the peer address is correct, and then try the operation again.
4653229	Specified value for "-offer-expiration" is obsolete.
4653236	The specified passphrase is too short.
4653257	The vifmgr process is not running.
4653261	Error finding IPspace.
4653671	No operational intercluster LIFs of the IPv4 address family is available on this node for the specified IPspace.
4655058	Expiration time cannot be more than 7 days in the future.
4655061	SVM does not exist in the IPspace.
4656070	The encryption protocol is meaningful only with authenticated cluster peer relationships.
4656072	The name must conform to the same rules as a cluster name.
4656073	Changing the encryption state requires the refreshing of the authentication passphrase.
4656075	Cannot specify encryption: this operation requires an ECV of ONTAP 9.6.0 or later.
4656076	Cluster peer modify was attempted with mismatched IPv4 and IPv6 addresses.
4656080	Specify either a passphrase or set "generate-passphrase" to true.
4656081	The remote IP address list is empty.
4656083	Cannot auto-generate a passphrase when "generate-passphrase" is false. Modifying a passphrase using an auto-generated passphrase requires "generate-passphrase" be true.
4656084	Passphrase can only be modified with an authenticated cluster peer relationship.

Error Code	Description
4656092	Cluster peer modify was attempted with a host name that did not resolve to an IPv4 or IPv6 address.
4656095	The address family of the specified peer addresses is not valid in this IPspace. Use /api/network/interfaces/ to verify that required LIFs are present and operational on each cluster node.
8847365	Unknown Host

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipspace

The IPspace of the local intercluster LIFs.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	

Name	Type	Description
update_time	string	The last time the state was updated.

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ip_address	string	IPv4 or IPv6 address
ipspace	ipspace	The IPspace of the local intercluster LIFs.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.

Name	Type	Description
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster schedules

Cluster schedules endpoint overview

Overview

You can use the /cluster/schedules API to view, create, and modify job schedules in a cluster.

Retrieving a job schedule

You can retrieve job schedules by issuing a GET request to /cluster/schedules. It is also possible to retrieve a specific schedule when qualified by its UUID to /cluster/schedules/{uuid}. You can apply queries on fields to

retrieve all schedules that match the combined query.

Example

```
# The API:
/api/cluster/schedules/

# The call:
curl -X GET 'https://<mgmt-ip>/api/cluster/schedules?type=interval'

# The response:
{
"records": [
  {
    "uuid": "0941e980-0158-11e9-a82c-005056bb4301",
    "name": "Balanced Placement Model Cache Update",
    "type": "interval",
    "interval": "PT7M30S",
    "_links": {
      "self": {
        "href": "/api/cluster/schedules/0941e980-0158-11e9-a82c-
005056bb4301"
      }
    }
  },
  {
    "uuid": "0944b975-0158-11e9-a82c-005056bb4301",
    "name": "Auto Balance Aggregate Scheduler",
    "type": "interval",
    "interval": "PT1H",
    "_links": {
      "self": {
        "href": "/api/cluster/schedules/0944b975-0158-11e9-a82c-
005056bb4301"
      }
    }
  },
  {
    "uuid": "0c65f1fb-0158-11e9-a82c-005056bb4301",
    "name": "Application Templates ASUP Dump",
    "type": "interval",
    "interval": "P1D",
    "_links": {
      "self": {
        "href": "/api/cluster/schedules/0c65f1fb-0158-11e9-a82c-
005056bb4301"
```

```
        }
      }
    }
  ],
  "num_records": 4,
  "_links": {
    "self": {
      "href": "/api/cluster/schedules?type=interval"
    }
  }
}
```

```
# The API:
/api/cluster/schedules/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/cluster/schedules/25312bd8-0158-11e9-
a82c-005056bb4301'

# The response:
{
"uuid": "25312bd8-0158-11e9-a82c-005056bb4301",
"name": "monthly",
"cluster": {
  "name": "my_cluster",
  "uuid": "f3f9bbfa-0157-11e9-a82c-005056bb4301"
},
"type": "cron",
"cron": {
  "minutes": [
    20
  ],
  "hours": [
    0
  ],
  "days": [
    1
  ]
},
"_links": {
  "self": {
    "href": "/api/cluster/schedules/25312bd8-0158-11e9-a82c-005056bb4301"
  }
}
}
```

Creating a job schedule

You can create a job schedule by issuing a POST request to /cluster/schedules to a node in the cluster. For a successful request, the POST request returns a status code of 201.
Job schedules can be of either type "cron" or type "interval". A cron schedule is run at specific minutes within the hour, or hours of the day, days of the week, days of the month, or months of the year. An interval schedule runs repeatedly at fixed intervals.

Required fields

- name - Name of the job schedule

You are required to provide a "minutes" field for a cron schedule. An "interval" field is required for an interval schedule. Do not provide both a "cron" field and an "interval" field.
The schedule UUID is created by the system.

Cron schedule fields

- cron.minutes - Minutes within the hour (0 through 59)
- cron.hours - Hours of the day (0 through 23)
- cron.weekdays - Weekdays (0 through 6, where 0 is Sunday and 6 is Saturday.)
- cron.days - Days of the month (1 through 31)
- cron.months - Months of the year (1 through 12)

Interval schedule field

- interval - Length of time in ISO 8601 duration format.

Examples

Create an interval schedule with a 1-week interval

```
# The API:
/api/cluster/schedules
one_week_interval.txt:
{
  "name": "test_interval_1",
  "interval": "P1W"
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@one_week_interval.txt"

# The response of a successful POST is empty.
```

Create a cron schedule that runs daily at 12:05

```
# The API:
/api/cluster/schedules
daily_noon_job.txt:
{
  "name": "test_cron_1",
  "cron":
  {
      "minutes": [ 5 ],
      "hours": [ 12 ]
  }
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@daily_noon_job.txt"

# The response of a successful POST is empty.
```

Optional fields

By default, the schedule is owned by the local cluster. In a MetroCluster configuration, you can specify the partner cluster if the local cluster is in the switchover state.

- cluster.name - Name of the cluster owning the schedule.
- cluster.uuid - UUID of the cluster owning the schedule.

Records field

You can create multiple schedules in one request by providing an array of named records with schedule entries. Each entry must follow the required and optional fields listed above.

Updating a job schedule

The following fields of an existing schedule can be modified:

- cron.minutes
- cron.hours
- cron.weekdays
- cron.days
- cron.months
- interval
  Note that you cannot modify the name, cluster, and type of schedule. Also, you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule. You can apply queries on fields to modify all schedules that match the combined query.

Examples

Modify an interval schedule with a 2-day and 5-minute interval

```
# The API:
/api/cluster/schedules/{uuid}
every_two_days_five_minutes.txt:
{
  "interval": "P2DT5M"
}

# The call:
curl  -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@every_two_days_five_minutes.txt"

# The response of a successful PATCH is empty.
```

Modify a cron schedule to run Mondays at 2

```
# The API:
/api/cluster/schedules/{uuid}
monday_at_two.txt:
{
  "cron":
  {
      "hours": [ 2 ],
      "weekdays": [ 1 ]
  }
}

# The call:
curl  -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@monday_at_two.txt"

# The response of a successful PATCH is empty.
```

Deleting a job schedule

You can delete job schedules based on their UUID. You can apply queries on fields to delete all schedules that match the combined query.

Example

```
# The API:
/api/cluster/schedules/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/{uuid}"

# The response of a successful DELETE of one schedule is empty.
```

```
# The API:
/api/cluster/schedules/

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/?name=test*"

# The response of a successful DELETE indicates the number of schedules
affected:
{
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/schedules?name=test*"
  }
}
}
```

MetroCluster configurations

In a MetroCluster configuration, user-created schedules owned by the local cluster are replicated to the partner cluster. Likewise, user-created schedules owned by the partner cluster are replicated to the local cluster. The owning cluster for a particular schedule is shown in the "cluster.name" and "cluster.uuid" fields.
Normally, only schedules owned by the local cluster can be created, modified, and deleted on the local cluster. However, when a MetroCluster configuration is in switchover, the cluster in switchover state can create, modify, and delete schedules owned by the partner cluster.

Retrieve schedules

GET `/cluster/schedules`

Introduced In: 9.6

Retrieves a schedule.

Parameters

Name	Type	In	Required	Description
interval	string	query	False	Filter by interval
uuid	string	query	False	Filter by uuid
cron.days	integer	query	False	Filter by cron.days • Max value: 31 • Min value: 1
cron.weekdays	integer	query	False	Filter by cron.weekdays • Max value: 6 • Min value: 0
cron.minutes	integer	query	False	Filter by cron.minutes • Max value: 59 • Min value: 0
cron.months	integer	query	False	Filter by cron.months • Max value: 12 • Min value: 1
cron.hours	integer	query	False	Filter by cron.hours • Max value: 23 • Min value: 0
cluster.uuid	string	query	False	Filter by cluster.uuid
cluster.name	string	query	False	Filter by cluster.name
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.10

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.10
scope	string	query	False	Filter by scope • Introduced in: 9.10
name	string	query	False	Filter by name • maxLength: 256 • minLength: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[schedule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cluster": {
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "cron": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      },
      "interval": "P1DT2H3M4S",
      "name": "string",
      "scope": "string",
      "svm": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
459760	The schedule specified is not a valid schedule.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.

Name	Type	Description
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

schedule

Complete schedule information

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Schedule type
uuid	string	Job schedule UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a schedule

POST `/cluster/schedules`

Introduced In: 9.6

Creates a schedule.

Required Fields

- name - Name of the job schedule.
  You must provide a minutes field for a cron schedule and an interval field for an interval schedule. Do not provide both a cron field and an interval field.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Schedule type
uuid	string	Job schedule UUID

Example request

```
{
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": [
      "integer"
    ],
    "hours": [
      "integer"
    ],
    "minutes": [
      "integer"
    ],
    "months": [
      "integer"
    ],
    "weekdays": [
      "integer"
    ]
  },
  "interval": "P1DT2H3M4S",
  "name": "string",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
458788	The schedule specified is not a valid schedule.
459760	The schedule specified is not a valid schedule.
459763	Schedule cannot be created locally using the remote cluster name as the owner.
459764	Cannot create a schedule with the same name as an existing schedule from the MetroCluster partner cluster but of a different schedule type.
460783	As this is a MetroCluster configuration and the local cluster is waiting for switchback, changes to non-system schedules are not allowed.
460784	An error occurred creating the remote cluster version of this schedule.
2621601	Cannot create a schedule on a system SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

schedule

Complete schedule information

Name	Type	Description
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Schedule type
uuid	string	Job schedule UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a schedule

DELETE `/cluster/schedules/{uuid}`

Introduced In: 9.6

Deletes a schedule.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Schedule UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
459758	Cannot delete a job schedule that is in use. Remove all references to the schedule, and then try to delete again.
459761	Schedule cannot be deleted on this cluster because it is replicated from the remote cluster.
459762	The schedule cannot be deleted because it is a system-level schedule.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a schedule

GET `/cluster/schedules/{uuid}`

Introduced In: 9.6

Retrieves a schedule.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Schedule UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Schedule type
uuid	string	Job schedule UUID

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": [
      "integer"
    ],
    "hours": [
      "integer"
    ],
    "minutes": [
      "integer"
    ],
    "months": [
      "integer"
    ],
    "weekdays": [
      "integer"
    ]
  },
  "interval": "P1DT2H3M4S",
  "name": "string",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a schedule

PATCH `/cluster/schedules/{uuid}`

Introduced In: 9.6

Updates a schedule. Note that you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Schedule UUID

Request Body

Name	Type	Description
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
type	string	Schedule type
uuid	string	Job schedule UUID

Example request

```
{
  "cron": {
    "days": [
      "integer"
    ],
    "hours": [
      "integer"
    ],
    "minutes": [
      "integer"
    ],
    "months": [
      "integer"
    ],
    "weekdays": [
      "integer"
    ]
  },
  "interval": "P1DT2H3M4S",
  "scope": "string",
  "type": "string",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
458788	The schedule specified is not a valid schedule.
459760	The schedule specified is not a valid schedule.
459761	Schedule cannot be modified on this cluster because it is replicated from the remote cluster.
460783	As this is a MetroCluster configuration and the local cluster is waiting for switchback, changes to non-system schedules are not allowed.
461785	A cron schedule cannot have an interval field.
461786	An interval schedule cannot have a cron field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

schedule

Complete schedule information

Name	Type	Description
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
scope	string	If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster.
type	string	Schedule type
uuid	string	Job schedule UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve environment sensors

GET `/cluster/sensors`

Introduced In: 9.11

Retrieves Environment Sensors

Related ONTAP commands

- `system node environment sensors show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
name	string	query	False	Filter by name
index	integer	query	False	Filter by index
discrete_value	string	query	False	Filter by discrete_value
warning_low_threshold	integer	query	False	Filter by warning_low_threshold
value	integer	query	False	Filter by value
warning_high_threshold	integer	query	False	Filter by warning_high_threshold
discrete_state	string	query	False	Filter by discrete_state

Name	Type	In	Required	Description
critical_low_threshold	integer	query	False	Filter by critical_low_threshold
critical_high_threshold	integer	query	False	Filter by critical_high_threshold
threshold_state	string	query	False	Filter by threshold_state
value_units	string	query	False	Filter by value_units
type	string	query	False	Filter by type
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[sensors]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "critical_high_threshold": 0,
      "critical_low_threshold": 0,
      "discrete_state": "normal",
      "discrete_value": "ok",
      "index": 0,
      "name": "PVCCSA CPU FD",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "threshold_state": "normal",
      "type": "string",
      "value": 831,
      "value_units": "mV",
      "warning_high_threshold": 0,
      "warning_low_threshold": 0
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

sensors

Environment Sensors

Name	Type	Description
_links	self_link	
critical_high_threshold	integer	Value above which the sensor goes into a critically high state.
critical_low_threshold	integer	Value below which the sensor goes into a critically low state.

Name	Type	Description
discrete_state	string	Used to determine whether the sensor is in a normal state or any other failed state based on the value of "discrete_value" field. This field is only applicable for discrete sensors.
discrete_value	string	Applies to discrete sensors which do not have an integer value. It can have values like on, off, good, bad, ok.
index	integer	Provides the sensor ID.
name	string	Name of the sensor.
node	node	
threshold_state	string	Used to determine whether the sensor is in a normal state or any other failed state.
type	string	Used to determine the type of the sensor.
value	integer	Provides the sensor reading.
value_units	string	Units in which the "value" is measured. Some examples of units are mV, mW*hr, C, RPM.
warning_high_threshold	integer	Value above which the sensor goes into a warning high state.
warning_low_threshold	integer	Value below which the sensor goes into a warning low state.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage environment sensors

Cluster sensors node.uuid index endpoint overview

Overview

You can use this API to retrieve the details of all platform environment sensors

Examples

Retrieving values of a single sensor

```
# The API:
GET /api/cluster/sensors/{node.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/sensors/{node.uuid}/{index}" -H
"accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"node": {
  "uuid": "19ec0b4a-4a4d-11ec-9036-d039ea4a991a",
  "name": "node1",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/19ec0b4a-4a4d-11ec-9036-d039ea4a991a"
    }
  }
},
"index": 1,
"name": "PVCCSA CPU FD",
"type": "voltage",
"value": 831,
"value_units": "mV",
"threshold_state": "normal",
"critical_low_threshold": 297,
"warning_low_threshold": 396,
"warning_high_threshold": 1485,
"critical_high_threshold": 1683,
"_links": {
  "self": {
    "href": "/api/cluster/sensors/19ec0b4a-4a4d-11ec-9036-d039ea4a991a/1"
  }
}
}
```

Retrieve the environment sensors for a node

GET `/cluster/sensors/{node.uuid}/{index}`

Introduced In: 9.11

Retrieve Environment Sensors

Parameters

Name	Type	In	Required	Description
index	string	path	True	Filter by index
node.uuid	string	path	True	Filter by node.uuid
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
critical_high_threshold	integer	Value above which the sensor goes into a critically high state.
critical_low_threshold	integer	Value below which the sensor goes into a critically low state.
discrete_state	string	Used to determine whether the sensor is in a normal state or any other failed state based on the value of "discrete_value" field. This field is only applicable for discrete sensors.
discrete_value	string	Applies to discrete sensors which do not have an integer value. It can have values like on, off, good, bad, ok.
index	integer	Provides the sensor ID.
name	string	Name of the sensor.
node	node	
threshold_state	string	Used to determine whether the sensor is in a normal state or any other failed state.

Name	Type	Description
type	string	Used to determine the type of the sensor.
value	integer	Provides the sensor reading.
value_units	string	Units in which the "value" is measured. Some examples of units are mV, mW*hr, C, RPM.
warning_high_threshold	integer	Value above which the sensor goes into a warning high state.
warning_low_threshold	integer	Value below which the sensor goes into a warning low state.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "critical_high_threshold": 0,
  "critical_low_threshold": 0,
  "discrete_state": "normal",
  "discrete_value": "ok",
  "index": 0,
  "name": "PVCCSA CPU FD",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "threshold_state": "normal",
  "type": "string",
  "value": 831,
  "value_units": "mV",
  "warning_high_threshold": 0,
  "warning_low_threshold": 0
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster software

Cluster software endpoint overview

Overview

You can use the ONTAP cluster software API to retrieve and display relevant information about a software profile, software packages collection, software history collection, and firmware packages collection. This API retrieves the information about all software packages present in the cluster, or a specific software package, or firmware upgrade status.

You can use the POST request to download a software package/firmware from an HTTP or FTP server. The PATCH request provides the option to upgrade the cluster software version. Select the `validate_only` field to validate the package before triggering the update. Set the `version` field to trigger the installation of the package in the cluster. You can pause, resume, or cancel any ongoing software upgrade by selecting `action`. You can use the DELETE request to remove a specific software package present in the cluster.

Examples

Retrieving software profile information

The following example shows how to retrieve software and firmware profile information. You can check the validation results after selecting the `validate_only` field. Upgrade progress information is available after an upgrade has started.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software?return_timeout=15" -H
"accept: application/hal+json"

# The response:
{
"validation_results": [
 {
   "update_check": "NFS mounts",
   "status": "warning",
   "issue": {
       "message": "Use NFS hard mounts, if possible.",
     }
   ,
   "action": {
       "message": "Use NFS hard mounts, if possible.",
   }
 }
],
"version": "9.5.0",
```

```
"pending_version": "9.6.0",
"nodes": [
  {
    "node": "Node 1",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automatic_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
```

```
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "xyz.zip",
          "update_type": "manual_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        }
      ],
      "disk": {
        "num_waiting_download": 0,
        "total_completion_estimate": 0,
        "average_duration_per_disk": 120,
        "update_status": "idle"
      },
      "shelf": {
        "update_status": "idle",
        "in_progress_count": 2
      },
      "dqp": {
        "revision": "20200117",
        "version": "3.17",
        "file_name": "qual_devices_v2",
```

```
        "record_count": {
          "drive": 680,
          "alias": 200,
          "device": 29,
          "system": 3
        }
      },
      "sp_bmc": {
        "fw_type": "SP",
        "image": " primary",
        "status": "installed",
        "is_current": true,
        "running_version": "1.2.3.4",
        "autoupdate": false,
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": false
      }
    }
  }
],
"metrocluster": {
  "progress_summary": {
          "message": "Update paused by user"
   },
  "progress_details": {
          "message": "Installing software image on cluster \"sti70-vsim-
ucs165n_siteA\"."
   },
  "clusters": [
    {
      "name": "sti70-vsim-ucs165n_siteA",
      "uuid": "720f046c-4b13-11e9-9c34-005056ac5626",
      "estimated_duration": 3480,
      "elapsed_duration": 0,
      "state": "waiting"
    },
  ]
},
"state": "in_progress",
"start_time": "2018-05-21T09:53:04+05:30",
"end_time": "2018-05-21T11:53:04+05:30",
"estimated_time": 5220,
"elapsed_time": 2140,
```

```
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "state": "in_progress",
    "estimated_duration": 4620,
    "elapsed_duration": 29,
    "node": {
      "name": "sti70-vsim-ucs165n"
    }
  }
],
"status_details": [
  {
    "name": "do-download-job",
    "state": "completed",
    "issue": {
            "message": "Image update complete",
            "code": 0
     },
    "start_time": "2018-05-21T09:53:04+05:30",
    "end_time": "2018-05-21T11:53:04+05:30",
    "node": {
      "name": "sti70-vsim-ucs165n"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software/"
  }
}
}
```

Upgrading the software version

The following example shows how to upgrade cluster software. Set the `version` field to trigger the installation of the package. You can select the `validate_only` field to validate the package before the installation starts. Setting `skip_warning` as `true` ignores the validation warning before the installation starts. Setting the `action` field performs a `pause`, `resume`, or `cancel' operation on an ongoing upgrade. An upgrade can only be resumed if it is in the paused state. Setting` stabilize_minutes `allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes. If` show_validation_details` is set to "true", all validation details will be shown in the output.

You can start the upgrade process at the cluster level. There are no options available to start the upgrade for a specific node or HA pair.

1. Validating the package and verifying the validation results

The following example shows how to validate a cluster software package. You must validate the package before the software upgrade. Set the `validate_only` field to `true` to start the validation. You can check for validation results in the GET /cluster/software endpoint.

```
# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?validate_only=true"
-H "accept: application/json" -H "Content-Type: application/hal+json" -d
'{ "version": "9.5.0"}'

# The response:
{
"job": {
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
}
```

The call to validate the software cluster version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-
005056956dfc" -H "accept: application/hal+json"

# The response:
{
"uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
"description": "PATCH /api/cluster/software",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
  }
}
}
```

You can check for validation results in the GET /cluster/software endpoint. The following example shows how to check the validation warnings and errors after setting the `validate_only` field to `true`.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept:
application/hal+json"

# The response:
{
"version": "9.7.0",
"validation_results": [
  {
    "update_check": "High Availability status",
    "status": "error",
    "issue": {
      "message": "Cluster HA is not configured in the cluster. Storage
failover is not enabled on node \"node1\", \"node2\".",
    },
    "action": {
```

```
      "message": "Check cluster HA configuration. Check storage failover
status."
    }
  },
  {
    "update_check": "Manual checks",
    "status": "warning",
    "issue" : {
      "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "sti70-vsim-ucs165n",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automatic_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
```

```
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "xyz.zip",
          "update_type": "automatic_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
```

```
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        }
      ],
      "disk": {
        "num_waiting_download": 0,
        "total_completion_estimate": 0,
        "average_duration_per_disk": 120,
        "update_status": "idle"
      },
      "shelf": {
        "update_status": "idle",
        "in_progress_count": 2
      },
      "dqp": {
        "revision": "20200117",
        "version": "3.17",
        "file_name": "qual_devices_v2",
        "record_count": {
          "drive": 680,
          "alias": 200,
          "device": 29,
          "system": 3
        }
      },
      "sp_bmc": {
        "fw_type": "SP",
        "image": " primary",
        "status": "installed",
        "is_current": true,
        "running_version": "1.2.3.4",
        "autoupdate": false,
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": false
      }
    }
  }
],
"state": "failed",
```

```
"elapsed_duration": 56,
"estimated_duration": 600,
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
```

2. Updating the cluster

The following example shows how to initiate a cluster software upgrade. You must validate the package before the software upgrade starts. Set the `skip_warnings` field to `true` to skip validation warnings and start the software package upgrade. You can specify the `stabilize_minutes` value between 1 to 60 minutes. Setting `stabilize_minutes` allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes. If the value of `show_validation_details` is set to "true", then all validation details will be shown in the output. By default, on non-MetroCluster configurations, nodes at the target release will be skipped over. However, this can be disabled by setting `skip_nodes_at_target_version` to `false`.

> it is invalid to set `skip_nodes_at_target_version` to `true` in pause, resume, or cancel actions. `skip_nodes_at_target_version` cannot be set to `true` in MetroCluster configurations.

```
# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?skip_warnings=true"
-H "accept: application/json" -H "Content-Type: application/hal+json" -d
'{ "version": "9.5.0"}'

# The response:
{
"job": {
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
}
```

The call to update the software cluster version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-
005056956dfc" -H "accept: application/hal+json"

# The response:
{
"uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
"description": "PATCH /api/cluster/software",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
  }
}
}
```

You can check the update progress information in the GET /cluster/software endpoint. The following example shows how to check the progress of an update after setting the `skip_warnings` field to `true`. Each node's object also includes information about the firmware update status on the node.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept:
application/hal+json"

# The response:
{
"version": "9.7.0",
"validation_results": [
  {
    "update_check": "Manual checks",
    "status": "warning",
```

```
    "issue" : {
      "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "sti70-vsim-ucs165n",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 3",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
```

```
              "worker_node": {
                "name": "Node 4",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "xyz.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        }
```

```
      ],
      "disk": {
        "num_waiting_download": 0,
        "total_completion_estimate": 0,
        "average_duration_per_disk": 120,
        "update_status": "idle"
      },
      "shelf": {
        "update_status": "idle",
        "in_progress_count": 2
      },
      "dqp": {
        "revision": "20200117",
        "version": "3.17",
        "file_name": "qual_devices_v2",
        "record_count": {
          "drive": 680,
          "alias": 200,
          "device": 29,
          "system": 3
        }
      },
      "sp_bmc": {
        "fw_type": "SP",
        "image": " primary",
        "status": "installed",
        "is_current": true,
        "running_version": "1.2.3.4",
        "autoupdate": false,
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": false
      }
    }
  }
],
"pending_version": "9.7.0",
"state": "in_progress",
"elapsed_duration": 63,
"estimated_duration": 5220,
"status_details": [
  {
    "name": "do-download-job",
    "status": "running",
```

```
    "issue": {
            "message": "Installing software image.",
            "code": 10551400
     },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "name": "do-download-job",
    "status": "running",
    "issue": {
            "message": "Installing software image.",
            "code": 10551400
    },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node2"
    }
  }
],
"_links": {
  "self": {
```

```
    "href": "/api/cluster/software"
  }
}
}
```

In the case of a post update check failure, the details are available under the heading "post_update_checks" in the GET /cluster/software endpoint.
The following example shows how to check the progress of an update after a post update check has failed. Each node's object also includes information about the firmware update status on the node.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept:
application/hal+json"

# The response:
{
"version": "9.7.0",
"validation_results": [
  {
    "update_check": "Manual checks",
    "status": "warning",
    "issue" : {
      "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "sti70-vsim-ucs165n",
    "version": "9.5.0",
```

```
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "working",
              "attempts": 3,
              "message": "<message catalog text>",
              "code": 3
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "completed",
              "attempts": 3,
              "message": "Error message",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
```

```
        },
        "zip_file_name": "xyz.zip",
        "update_type": "automated_update",
        "update_state": [
          {
            "worker_node": {
              "name": "Node 1",
              "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
            },
            "status": "completed",
            "attempts": 1,
            "message": "Error message",
            "code": 0
          },
          {
            "worker_node": {
              "name": "Node 2",
              "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
            },
            "status": "completed",
            "attempts": "3",
            "message": "Error message",
            "code": 0
          }
        ]
      }
    ],
    "disk": {
      "num_waiting_download": 0,
      "total_completion_estimate": 0,
      "average_duration_per_disk": 120,
      "update_status": "idle"
    },
    "shelf": {
      "update_status": "idle",
      "in_progress_count": 2
    },
    "dqp": {
      "revision": "20200117",
      "version": "3.17",
      "file_name": "qual_devices_v2",
      "record_count": {
        "drive": 680,
        "alias": 200,
        "device": 29,
        "system": 3
```

```
        }
      },
      "sp_bmc": {
        "fw_type": "SP",
        "image": " primary",
        "status": "installed",
        "is_current": "true",
        "running_version": "1.2.3.4",
        "autoupdate": "false",
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": "yes"
      }
    }
  }
],
"pending_version": "9.7.0",
"state": "in_progress",
"elapsed_duration": 63,
"estimated_duration": 5220,
"status_details": [
  {
    "name": "do-download-job",
    "status": "completed",
    "issue": {
            "message": "Image update complete.",
            "code": 0
     },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "name": "do-download-job",
    "status": "completed",
    "issue": {
            "message": "Image update complete.",
            "code": 0
    },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
```

```
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "status": "completed",
    "estimated_duration": 4620,
    "elapsed_duration": 3120,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "completed",
    "estimated_duration": 4620,
    "elapsed_duration": 3210,
    "node": {
      "name": "node2"
    }
  },
  {
    "phase": "Post-update checks",
    "status": "paused_on_error",
    "estimated_duration": 600,
    "elapsed_duration": 10,
    "node": {
      "name": "node2"
    }
  }
],
"post_update_checks": [
  {
    "update_check": "Aggregate Health Status",
    "status": "error",
    "issue": {
      "message": "Not all aggregates are online"
    },
    "action": {
      "message": "Ensure all aggregates are online."
    }
  },
  {
    "update_check": "HA Health Status",
```

```
    "status": "error",
    "issue": {
      "message": "Storage failover is not enabled on nodes of the
cluster."
    },
    "action": {
      "message": "Ensure storage failover is enabled on all nodes of the
cluster."
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
```

3. Pausing, resuming or canceling an upgrade

The following example shows how to `pause` an ongoing cluster software package upgrade. Set the `action` field to `pause`, `resume`, or `cancel` to pause, resume or cancel the upgrade respectively. Not all update operations support these actions. An update can only be resumed if it is in the paused state.

```
# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?action=pause" -H
"accept: application/json" -H "Content-Type: application/hal+json" -d '{
"version": "9.5.0"}'

# The response:
{
"job": {
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
}
```

The call to update the software cluster version and/or firmware version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-
005056956dfc" -H "accept: application/hal+json"

# The response:
{
"uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
"description": "PATCH /api/cluster/software",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
  }
}
}
```

You can check the progress of the upgrade in the GET /cluster/software endpoint. The following example shows how to check the progress of the pause upgrade state after setting the `action` field to `pause`.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept:
application/hal+json"

# The response:
{
"version": "9.7.0",
"validation_results": [
  {
    "update_check": "Manual checks",
    "status": "warning",
    "issue" : {
```

```
      "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "sti70-vsim-ucs165n",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "status": "complete",
```

```
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "xyz.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        }
      ],
      "disk": {
        "num_waiting_download": 0,
        "total_completion_estimate": 0,
        "average_duration_per_disk": 120,
        "update_status": "idle"
      },
      "shelf": {
        "update_status": "idle",
```

```
        "in_progress_count": 2
      },
      "dqp": {
        "revision": "20200117",
        "version": "3.17",
        "file_name": "qual_devices_v2",
        "record_count": {
          "drive": 680,
          "alias": 200,
          "device": 29,
          "system": 3
        }
      },
      "sp_bmc": {
        "fw_type": "SP",
        "image": " primary",
        "status": "installed",
        "is_current": true,
        "running_version": "1.2.3.4",
        "autoupdate": false,
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": false
      }
    }
  }
],
"pending_version": "9.7.0",
"state": "pause_pending",
"elapsed_duration": 103,
"estimated_duration": 5220,
"status_details": [
  {
    "status": "in-progress",
    "issue": {
            "message": "Installing software image.",
            "code": 10551400
     },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
```

```
    "status": "in-progress",
    "issue": {
            "message": "Installing software image.",
            "code": 10551400
     },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Pre-update checks",
    "status": "completed",
    "estimated_duration": 600,
    "elapsed_duration": 54,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49,
    "node": {
      "name": "node2"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
```

Uploading a software/firmware package

The following example shows how to upload a software package.

```
# The API:
/api/cluster/software/upload

# The call:
curl -ku username:password -F "file=@image.tgz" -X POST "https://<mgmt-
ip>/api/cluster/software/upload?return_timeout=0"

# The response:
{
"job": {
"uuid": "12db53fd-8326-11ea-91eb-005056bb16e5",
"_links": {
    "self": {
    "href": "/api/cluster/jobs/12db53fd-8326-11ea-91eb-005056bb16e5"
    }
 }
}
}
```

Retrieve the cluster software profile

GET `/cluster/software`

Introduced In: 9.6

Retrieves the software profile of a cluster.

Related ONTAP commands

- `cluster image show`
- `cluster image show-update-progress`
- `system node image package show`

Learn more

- DOC /cluster/software

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
action	string	User triggered action to apply to the install operation
elapsed_duration	integer	Elapsed time during the upgrade or validation operation
estimated_duration	integer	Overall estimated time for completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes, active versions, and firmware update progressions.

Name	Type	Description
pending_version	string	Version being installed on the system. • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
post_update_checks	array[software_validation_reference]	List of failed post-update checks' warnings, errors, and advice.
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. • example: ONTAP_X • Introduced in: 9.6 • x-nullable: true

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "pause",
  "elapsed_duration": 2140,
  "estimated_duration": 5220,
  "metrocluster": {
    "clusters": [
      {
        "elapsed_duration": 2140,
        "estimated_duration": 3480,
        "name": "cluster_A",
        "state": "in_progress"
      }
    ],
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": [
    {
      "firmware": {
        "cluster_fw_progress": [
          {
            "job": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "uuid": "string"
            },
            "update_state": [
              {
                "attempts": 3,
                "code": 2228325,
                "message": "Cannot open local staging ZIP file
disk_firmware.zip",
```

```
                "status": "string",
                "worker_node": {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "name": "node1",
                  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                }
              }
            ],
            "update_type": "string",
            "zip_file_name": "disk_firmware.zip"
          }
        ],
        "disk": {
          "average_duration_per_disk": 120,
          "num_waiting_download": 0,
          "total_completion_estimate": 0,
          "update_status": "running"
        },
        "dqp": {
          "file_name": "qual_devices_v3",
          "record_count": {
            "alias": 200,
            "device": 29,
            "drive": 680,
            "system": 3
          },
          "revision": "20200117",
          "version": "3.18"
        },
        "shelf": {
          "in_progress_count": 2,
          "update_status": "running"
        },
        "sp_bmc": {
          "autoupdate": "",
          "end_time": "2020-05-17 16:00:00 -0400",
          "fw_type": "SP",
          "image": "primary",
          "is_current": 1,
          "last_update_state": "passed",
          "percent_done": 100,
          "running_version": "1.2.3.4",
```

```
          "start_time": "2020-05-17 16:00:00 -0400",
          "state": "installed"
        },
        "system_firmware": {
          "boot_media_bios_version": "13.16",
          "boot_media_loader_version": "8.2.0",
          "install_pending": "",
          "running_bios_version": "13.16",
          "running_loader_version": "8.2.0"
        }
      },
      "model": "AFF-A800",
      "name": "node1",
      "software_images": [
        {
          "package": "image.tgz"
        }
      ],
      "version": "ONTAP_X"
    }
  ],
  "pending_version": "ONTAP_X_1",
  "post_update_checks": [
    {
      "action": {
        "message": "Use NFS hard mounts, if possible."
      },
      "issue": {
        "message": "Cluster HA is not configured in the cluster."
      },
      "status": "warning",
      "update_check": "nfs_mounts"
    }
  ],
  "state": "completed",
  "status_details": [
    {
      "action": {
        "message": "string"
      },
      "end_time": "2019-02-02 14:00:00 -0500",
      "issue": {
        "code": 10551399,
        "message": "Image update complete"
      },
      "name": "initialize",
```

```
      "node": {
        "name": "node1"
      },
      "start_time": "2019-02-02 14:00:00 -0500",
      "state": "failed"
    }
  ],
  "update_details": [
    {
      "elapsed_duration": 2100,
      "estimated_duration": 4620,
      "node": {
        "name": "node1"
      },
      "phase": "Post-update checks",
      "state": "failed"
    }
  ],
  "validation_results": [
    {
      "action": {
        "message": "Use NFS hard mounts, if possible."
      },
      "issue": {
        "message": "Cluster HA is not configured in the cluster."
      },
      "status": "warning",
      "update_check": "nfs_mounts"
    }
  ],
  "version": "ONTAP_X"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1048576	Error initializing software image information.
1048577	Software image information not initialized.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

software_mcc_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration of update time (in seconds) of MetroCluster.
estimated_duration	integer	Estimated duration of update time (in seconds) of MetroCluster.
name	string	Name of the site in MetroCluster.
state		Upgrade state of MetroCluster.

progress_details

Name	Type	Description
message	string	MetroCluster update progress details.

progress_summary

Name	Type	Description
message	string	MetroCluster update progress summary.

metrocluster

Name	Type	Description
clusters	array[software_mcc_reference]	List of MetroCluster sites, statuses, and active ONTAP versions. • readOnly: 1 • Introduced in: 9.6
progress_details	progress_details	
progress_summary	progress_summary	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

worker_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

firmware_update_progress_state

Name	Type	Description
attempts	integer	
code	integer	Code corresponding to the status message.
message	string	Error message returned when a cluster firmware update job fails.
status	string	
worker_node	worker_node	

firmware_update_progress

Name	Type	Description
job	job_link	

Name	Type	Description
update_state	array[firmware_update_progress_state]	
update_type	string	Specifies the type of update.
zip_file_name	string	

firmware_disk

Name	Type	Description
average_duration_per_disk	integer	Average firmware update duration per disk (in seconds).
num_waiting_download	integer	The number of disks waiting to download the firmware update.
total_completion_estimate	integer	Estimated firmware update duration to completion (in minutes).
update_status		Status of the background disk firmware update.

firmware_dqp_record_count

Name	Type	Description
alias	integer	Alias record count
device	integer	Device record count
drive	integer	Drive record count
system	integer	System record count

firmware_dqp

Name	Type	Description
file_name	string	Firmware file name
record_count	firmware_dqp_record_count	
revision	string	Firmware revision
version	string	Firmware version

firmware_shelf

Name	Type	Description
in_progress_count	integer	
update_status		Status of the shelf firmware update.

firmware_sp_bmc

Name	Type	Description
autoupdate	boolean	
end_time	string	
fw_type	string	
image	string	
in_progress	boolean	
is_current	boolean	
last_update_state	string	
percent_done	integer	
running_version	string	
start_time	string	
state	string	

system_firmware

Name	Type	Description
boot_media_bios_version	string	BIOS version that is currently staged on the boot media of the node.
boot_media_loader_version	string	LOADER version that is currently staged on the boot media of the node.
install_pending	boolean	Flag that indicates if the system firmware install is pending. A true value suggests that a node reboot or cluster upgrade is required for completing installation.
running_bios_version	string	BIOS version that is currently installed on the node.

Name	Type	Description
running_loader_version	string	LOADER version that is currently installed on the node.

firmware

Name	Type	Description
cluster_fw_progress	array[firmware_update_progress]	
disk	firmware_disk	
dqp	firmware_dqp	
shelf	firmware_shelf	
sp_bmc	firmware_sp_bmc	
system_firmware	system_firmware	

software_images

Name	Type	Description
package	string	Package file name.

software_node_reference

Name	Type	Description
firmware	firmware	
model	string	Model number of the node.
name	string	Name of the node.
software_images	array[software_images]	List of software image information.
version	string	ONTAP version of the node. • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

action

Name	Type	Description
message	string	Specifies the corrective action to take to resolve an error.

issue

Name	Type	Description
message	string	Details of the error or warning encountered by the update checks.

software_validation_reference

Name	Type	Description
action	action	
issue	issue	
status	string	Status of the update check.
update_check	string	Name of the update check.

action

Name	Type	Description
code	integer	Error code corresponding the status error
message	string	Corrective action to be taken to resolve the status error.

issue

Name	Type	Description
code	integer	Error code corresponding to update status
message	string	Update status details

node

Name	Type	Description
name	string	Name of the node to be retrieved for status details.

software_status_details_reference

Name	Type	Description
action	action	
end_time	string	End time for each status phase.
issue	issue	
name	string	Name of the phase to be retrieved for status details.
node	node	
start_time	string	Start time for each status phase.
state	string	Status of the phase

node

Name	Type	Description
name	string	Name of the node to be retrieved for update details.

software_update_details_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration for each update phase
estimated_duration	integer	Estimated duration for each update phase
node	node	
phase	string	Phase details
state	string	State of the update phase

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the cluster software version

PATCH `/cluster/software`

Introduced In: 9.6

Updates the cluster software version.
Important note:

- Setting 'version' triggers the package installation.
- To validate the package for installation but not perform the installation, use the `validate_only` field on the request.

Required properties

- `version` - Software version to be installed on the cluster.

Recommended optional parameters

- `validate_only` - Required to validate a software package before an upgrade.
- `skip_warnings` - Used to skip validation warnings when starting a software upgrade.
- `action` - Used to pause, resume, or cancel an ongoing software upgrade.
- `stabilize_minutes` - Specifies a custom value between 1 to 60 minutes that allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes.
- `estimate_only` - Estimates the time duration; does not perform any update.
- `nodes_to_update` - Specifies a subset of the cluster's nodes for update.
- `show_validation_details` - If the value is set to true, then all validation details will be shown in the

output.

- `skip_nodes_at_target_version` - If the value is set to true, then nodes already at the target version will not be upgraded. Defaults to true in non-MetroCluster configurations. Setting this option to false will force all the selected nodes of the cluster to undergo upgrade.

Related ONTAP commands

- `cluster image validate`
- `cluster image update`
- `cluster image pause-update`
- `cluster image resume-update`
- `cluster image cancel-update`

Learn more

- DOC /cluster/software

Parameters

Name	Type	In	Required	Description
skip_warnings	boolean	query	False	Ignore warnings and proceed with the install.
action	string	query	False	Requests an upgrade to pause, resume, or cancel. Note that not all upgrades support these actions. An upgrade can only be resumed if it is in the paused state. When a request to cancel an upgrade is successful, the upgrade state changes to either `success` or `failure`. • enum: ["pause", "resume", "cancel"]

Name	Type	In	Required	Description
stabilize_minutes	integer	query	False	Sets a custom value between 1 to 60 minutes for the upgrade, allowing each node a specified amount of time to stabilize after a reboot. • Introduced in: 9.8
estimate_only	boolean	query	False	Generates an estimate of the time required for the overall update operation for the specified package. No update is performed when this option is used. The default is false. • Introduced in: 9.9
force_rolling	boolean	query	False	Forces a rolling upgrade on the cluster. This option is not applicable for a single-node cluster and for a two-node MetroCluster. The default is false. • Introduced in: 9.9

Name	Type	In	Required	Description
nodes_to_update	string	query	False	A comma separated list of node names that are to be updated. The nodes must be a part of an HA pair. The default is all nodes. If the nodes_to_update parameter is an empty string, the upgrade errors out and does not proceed. • Introduced in: 9.9
show_validation_details	boolean	query	False	If the value is set to true, then all validation details will be shown in the output. • Introduced in: 9.11

Name	Type	In	Required	Description
skip_nodes_at_target_version	boolean	query	False	Defaults to true in non-MetroCluster configurations. When set to true, nodes already at the target version will not be upgraded. Setting this field to false will force nodes at the target version to undergo upgrade including migrating LIFs, performing takeover/giveback, and rebooting. It's invalid to set this option to true when the action field is set. It's an invalid option until effective cluster version is 9_16_0. • Introduced in: 9.16
pause_after	string	query	False	The pause after specified tasks option. When ANDU is paused user interaction is required to resume the update. The default is none. • Introduced in: 9.9 • enum: ["none", "takeover_giveback", "all"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
validate_only	boolean	query	False	Validate the operation and its parameters, without actually performing the operation.

Request Body

Name	Type	Description
action	string	User triggered action to apply to the install operation
elapsed_duration	integer	Elapsed time during the upgrade or validation operation

Name	Type	Description
estimated_duration	integer	Overall estimated time for completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes, active versions, and firmware update progressions.
pending_version	string	Version being installed on the system. • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
post_update_checks	array[software_validation_reference]	List of failed post-update checks' warnings, errors, and advice.
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. • example: ONTAP_X • Introduced in: 9.6 • x-nullable: true

Example request


```
{
  "action": "pause",
  "elapsed_duration": 2140,
  "estimated_duration": 5220,
  "metrocluster": {
    "clusters": [
      {
        "elapsed_duration": 2140,
        "estimated_duration": 3480,
        "name": "cluster_A",
        "state": "in_progress"
      }
    ],
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": [
    {
      "model": "AFF-A800",
      "name": "node1",
      "software_images": [
        {
          "package": "image.tgz"
        }
      ],
      "version": "ONTAP_X"
    }
  ],
  "pending_version": "ONTAP_X_1",
  "post_update_checks": [
    {
      "action": {
        "message": "Use NFS hard mounts, if possible."
      },
      "issue": {
        "message": "Cluster HA is not configured in the cluster."
      },
      "status": "warning",
      "update_check": "nfs_mounts"
    }
```

```
  ],
  "state": "completed",
  "status_details": [
    {
      "action": {
        "message": "string"
      },
      "end_time": "2019-02-02 14:00:00 -0500",
      "issue": {
        "code": 10551399,
        "message": "Image update complete"
      },
      "name": "initialize",
      "node": {
        "name": "node1"
      },
      "start_time": "2019-02-02 14:00:00 -0500",
      "state": "failed"
    }
  ],
  "update_details": [
    {
      "elapsed_duration": 2100,
      "estimated_duration": 4620,
      "node": {
        "name": "node1"
      },
      "phase": "Post-update checks",
      "state": "failed"
    }
  ],
  "validation_results": [
    {
      "action": {
        "message": "Use NFS hard mounts, if possible."
      },
      "issue": {
        "message": "Cluster HA is not configured in the cluster."
      },
      "status": "warning",
      "update_check": "nfs_mounts"
    }
  ],
  "version": "ONTAP_X"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2424933	An internal error occurred while checking MetroCluster information.
2424998	An internal error occurred while checking MetroCluster configuration.
2425737	An internal error occurred while checking MetroCluster information.
10551297	Failed to find an update in progress.
10551298	Internal error while attempting to pause the upgrade operation.
10551300	There is no update in progress to be paused.
10551303	The operation is invalid while the update is not in the paused state.

Error Code	Description
10551304	An internal error occurred while canceling the current update operation.
10551306	A cancel operation is not possible at this time.
10551315	Failed to find the package in the package repository.
10551319	An internal error occurred while preparing for the update.
10551320	Failed to create task on master update manager node.
10551325	The required package version is not present in RDB.
10551353	Internal error occurred while running the ANDU pre-validation checks.
10551354	Invalid operation while the package is being deleted.
10551357	The operation is invalid while a previous update is still in progress.
10551368	The list of nodes should contain HA pairs only.
10551391	An internal error occurred while performing the upgrade operation.
10551395	ANDU validation check resulted in warnings.
10551396	ANDU validation checks failed.
10551434	The options are invalid for a resume operation.
10551524	The upgrade operation is in the running state, pause the operation before attempting to cancel.
10551558	Cluster configuration is not supported.
10551564	Batch mode upgrade is not supported for MetroCluster configurations.
10551565	Failed to contact the MetroCluster partner cluster, check the MetroCluster configuration then try again.
10551566	Validation is not complete on the partner MetroCluster cluster.
10551567	The required package is not available on the partner MetroCluster cluster.
10551572	Internal error while checking the update status from RDB. Ensure that cluster is healthy and retry the operation.
10551573	The running update is not in paused state on the MetroCluster partner cluster, so it cannot be resumed.
10551574	The running update is not in the paused state on the MetroCluster partner cluster, so it cannot be canceled.
10551592	The nodes selection option is not supported for MetroCluster configurations.

Error Code	Description
10551599	Double-hop package is missing.
10551602	A double-hop upgrade is not supported.
10551606	An option selected requires a higher effective cluster version.
10551643	Operation invalid while controller replacement is in progress.
10551656	Invalid operation while ANDU validation checks are in progress.
10551718	Invalid operation before running validation checks.
10551719	ANDU validation results are too old.
10551720	ANDU validation checks have failed with errors on both clusters in a MetroCluster config.
10551724	ANDU validation checks were run on a different version from the requested operation.
10551837	An internal error occurred while generating the AutoSupport prior to starting ANDU.
10551840	An internal error occurred while generating the AutoSupport prior to starting ANDU.
10551841	An internal error occurred while generating the AutoSupport prior to starting ANDU.
10551854	All specified nodes are already running the specified package version.
10551859	Failed to access the package repository and its backup copy.
10551872	Package version is not mentioned.
10551897	All nodes are already running the requested version.
10551898	Failed to get nodes-to-update list.
10551899	skip_nodes_at_target_version cannot be specified in a validate_only, pause, resume, or cancel operations.
10551900	skip_nodes_at_target_version cannot be set to true in MetroCluster configurations.
10551901	skip_nodes_at_target_version conflicts with another specified field.
10551902	Failed to determine if the cluster is configured for MetroCluster.
10551908	skip_nodes_at_target_version is not a valid option until effective cluster version is 9_16_0.
10551910	The operation is invalid while in the current upgrade state.

Error Code	Description
13303864	SnapMirror operation is in progress, retry later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

software_mcc_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration of update time (in seconds) of MetroCluster.
estimated_duration	integer	Estimated duration of update time (in seconds) of MetroCluster.
name	string	Name of the site in MetroCluster.
state		Upgrade state of MetroCluster.

progress_details

Name	Type	Description
message	string	MetroCluster update progress details.

progress_summary

Name	Type	Description
message	string	MetroCluster update progress summary.

metrocluster

Name	Type	Description
clusters	array[software_mcc_reference]	List of MetroCluster sites, statuses, and active ONTAP versions. • readOnly: 1 • Introduced in: 9.6
progress_details	progress_details	

Name	Type	Description
progress_summary	progress_summary	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

worker_node

Name	Type	Description
name	string	
uuid	string	

firmware_update_progress_state

Name	Type	Description
attempts	integer	
code	integer	Code corresponding to the status message.
message	string	Error message returned when a cluster firmware update job fails.
status	string	
worker_node	worker_node	

firmware_update_progress

Name	Type	Description
job	job_link	
update_state	array[firmware_update_progress_state]	
update_type	string	Specifies the type of update.
zip_file_name	string	

firmware_disk

Name	Type	Description
average_duration_per_disk	integer	Average firmware update duration per disk (in seconds).
num_waiting_download	integer	The number of disks waiting to download the firmware update.
total_completion_estimate	integer	Estimated firmware update duration to completion (in minutes).
update_status		Status of the background disk firmware update.

firmware_dqp_record_count

Name	Type	Description
alias	integer	Alias record count
device	integer	Device record count
drive	integer	Drive record count
system	integer	System record count

firmware_dqp

Name	Type	Description
file_name	string	Firmware file name
revision	string	Firmware revision
version	string	Firmware version

firmware_shelf

Name	Type	Description
in_progress_count	integer	
update_status		Status of the shelf firmware update.

firmware_sp_bmc

Name	Type	Description
autoupdate	boolean	
end_time	string	
fw_type	string	
image	string	
in_progress	boolean	
is_current	boolean	
last_update_state	string	
percent_done	integer	
running_version	string	
start_time	string	
state	string	

system_firmware

Name	Type	Description
boot_media_bios_version	string	BIOS version that is currently staged on the boot media of the node.
boot_media_loader_version	string	LOADER version that is currently staged on the boot media of the node.
install_pending	boolean	Flag that indicates if the system firmware install is pending. A true value suggests that a node reboot or cluster upgrade is required for completing installation.
running_bios_version	string	BIOS version that is currently installed on the node.
running_loader_version	string	LOADER version that is currently installed on the node.

firmware

Name	Type	Description
cluster_fw_progress	array[firmware_update_progress]	

software_images

Name	Type	Description
package	string	Package file name.

software_node_reference

Name	Type	Description
model	string	Model number of the node.
name	string	Name of the node.
software_images	array[software_images]	List of software image information.
version	string	ONTAP version of the node. • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

action

Name	Type	Description
message	string	Specifies the corrective action to take to resolve an error.

issue

Name	Type	Description
message	string	Details of the error or warning encountered by the update checks.

software_validation_reference

Name	Type	Description
action	action	
issue	issue	
status	string	Status of the update check.
update_check	string	Name of the update check.

action

Name	Type	Description
code	integer	Error code corresponding the status error
message	string	Corrective action to be taken to resolve the status error.

issue

Name	Type	Description
code	integer	Error code corresponding to update status
message	string	Update status details

node

Name	Type	Description
name	string	Name of the node to be retrieved for status details.

software_status_details_reference

Name	Type	Description
action	action	
end_time	string	End time for each status phase.
issue	issue	
name	string	Name of the phase to be retrieved for status details.
node	node	
start_time	string	Start time for each status phase.
state	string	Status of the phase

node

Name	Type	Description
name	string	Name of the node to be retrieved for update details.

software_update_details_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration for each update phase
estimated_duration	integer	Estimated duration for each update phase
node	node	
phase	string	Phase details
state	string	State of the update phase

software_reference

Name	Type	Description
action	string	User triggered action to apply to the install operation
elapsed_duration	integer	Elapsed time during the upgrade or validation operation
estimated_duration	integer	Overall estimated time for completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes, active versions, and firmware update progressions.
pending_version	string	Version being installed on the system. • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
post_update_checks	array[software_validation_reference]	List of failed post-update checks' warnings, errors, and advice.
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. • example: ONTAP_X • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve software or firmware download status

GET `/cluster/software/download`

Introduced In: 9.7

Retrieves the software or firmware download status.

Learn more

- DOC /cluster/software/download

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
code	integer	Code returned corresponds to a download message
message	string	Download progress details
state	string	Download status of the package

Example response

```
{
  "code": 10551382,
  "message": "Package download in progress",
  "state": "success"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10551382	Package download is still running.
10551383	Operation took longer than the maximum 1 hour time limit.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Download a software or firmware package

POST `/cluster/software/download`

Introduced In: 9.6

Downloads a software or firmware package from the server.

Required properties

- `url` - URL location of the software package

Recommended optional parameters

- `username` - Username of HTTPS/FTP server
- `password` - Password of HTTPS/FTP server

Related ONTAP commands

- `cluster image package get`

Learn more

- DOC /cluster/software/download

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
code	integer	Code returned corresponds to a download message.
message	string	Download progress details.
password	string	Password for download
state	string	Download status of the package.

Name	Type	Description
url	string	HTTP or FTP URL of the package through a server
username	string	Username for download

Example request

```
{
  "code": 10551382,
  "message": "Package download in progress",
  "password": "admin_password",
  "state": "success",
  "url": "http://server/package",
  "username": "admin"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10551327	Package image with the same name already exists.
10551357	Cannot perform an update when a previous update is still in progress.
10551359	Internal error. Failed to process the package after download completed. Try uploading the file again or contact technical support for assistance.
10551381	Package download failed.
10551382	Package download is still running.
10551384	Package download has not started.
10551391	Internal error. Contact technical support for assistance.
10551392	Internal error. Contact technical support for assistance.
10551496	Firmware file already exists.
10551797	Internal error. Failed to check if file upload is enabled. Contact technical support for assistance.
10551859	Failed to set primary and secondary nodes to store new image.
10551885	Package download failed due to invalid url.
10551892	Package download failed due to an unhealthy node. Restore the node to a healthy state, then retry the operation.
39387137	Invalid URL syntax was provided. Retry with a valid URL.
39387138	Unsupported URL scheme provided. Retry with one of FILE://, FTP://, or HTTPS://.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

software_package_download

Name	Type	Description
code	integer	Code returned corresponds to a download message.
message	string	Download progress details.
password	string	Password for download
state	string	Download status of the package.
url	string	HTTP or FTP URL of the package through a server
username	string	Username for download

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve software installation requests history details

GET `/cluster/software/history`

Introduced In: 9.6

Retrieves the history details for software installation requests.

Related ONTAP commands

- `cluster image show-update-history`

Learn more

- DOC /cluster/software/history

Parameters

Name	Type	In	Required	Description
end_time	string	query	False	Filter by end_time • Introduced in: 9.7
node.uuid	string	query	False	Filter by node.uuid • Introduced in: 9.7
node.name	string	query	False	Filter by node.name • Introduced in: 9.7

Name	Type	In	Required	Description
to_version	string	query	False	Filter by to_version • Introduced in: 9.7
from_version	string	query	False	Filter by from_version • Introduced in: 9.7
start_time	string	query	False	Filter by start_time • Introduced in: 9.7
state	string	query	False	Filter by state • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[software_history]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "end_time": "2019-02-02 15:00:00 -0500",
      "from_version": "ONTAP_X1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "start_time": "2019-02-02 14:00:00 -0500",
      "state": "successful",
      "to_version": "ONTAP_X2"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

software_history

Name	Type	Description
end_time	string	Completion time of this installation request.
from_version	string	Previous version of node • example: ONTAP_X1 • readOnly: 1 • Introduced in: 9.7 • x-nullable: true
node	node	
start_time	string	Start time of this installation request.
state	string	Status of this installation request.

Name	Type	Description
to_version	string	Updated version of node • example: ONTAP_X2 • readOnly: 1 • Introduced in: 9.7 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve cluster software packages

GET `/cluster/software/packages`

Introduced In: 9.6

Retrieves the software packages for a cluster.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- DOC /cluster/software/packages

Parameters

Name	Type	In	Required	Description
create_time	string	query	False	Filter by create_time • Introduced in: 9.7
version	string	query	False	Filter by version • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[software_package]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "create_time": "2019-02-04 14:00:00 -0500",
      "version": "ONTAP_X"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

software_package

Name	Type	Description
_links	_links	
create_time	string	Indicates when this package was loaded
version	string	Version of this package • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a software package from the cluster

DELETE `/cluster/software/packages/{version}`

Introduced In: 9.6

Deletes a software package from the cluster. The delete operation fails if the package is currently installed.

Related ONTAP commands

- `cluster image package delete`

Learn more

- DOC /cluster/software/packages

Parameters

Name	Type	In	Required	Description
version	string	path	True	

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10551315	The repository does not contain any packages.
10551322	An internal error occurred while retrieving the package cleanup status.
10551323	An internal error occurred while removing the package information on a node.
10551324	An internal error occurred while removing the package information on multiple nodes.
10551325	The required package could not be found in the repository.
10551326	An error occurred while deleting older package cleanup tasks.
10551346	A validation is in progress, retry command after it is completed.
10551367	The repository is busy, retry the operation later.
10551388	The package delete operation timed out.

Error Code	Description
10551892	Package delete failed due to an unhealthy node. Restore the node to a healthy state, then retry the operation.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the software package information

GET `/cluster/software/packages/{version}`

Introduced In: 9.6

Retrieves the software package information.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- DOC /cluster/software/packages

Parameters

Name	Type	In	Required	Description
version	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
create_time	string	Indicates when this package was loaded
version	string	Version of this package • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "create_time": "2019-02-04 14:00:00 -0500",
  "version": "ONTAP_X"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Upload a software or firmware package located on the local file system

POST `/cluster/software/upload`

Introduced In: 9.8

Uploads a software or firmware package located on the local filesystem.

Related ONTAP commands

- `cluster image package get`

Learn more

- DOC /cluster/software

Parameters

Name	Type	In	Required	Description
file	file	formData	False	Info specification
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10551359	Internal error. Failed to process the package after download completed. Try uploading the file again or contact technical support for assistance.
10551373	Operation took longer than the maximum 1 hour time limit.
10551391	Internal error. Contact technical support for assistance.
10551392	Internal error. Contact technical support for assistance.
10551496	Firmware file already exists.
10551797	Internal error. Failed to check if file upload is enabled.

Error Code	Description
10551798	File upload is disabled. Enable file upload by setting "ApacheUploadEnabled 1" in the web services configuration file or contact technical support for assistance.
10551799	The requested filename exceeds the max path length. Rename using a shorter name.
10551800	Internal error. Access permissions restrict file upload. This is likely due to a bad web jail setup. Contact technical support for assistance.
10551801	Internal error. A read/write error occurred when uploading this file. Contact technical support for assistance
10551802	An invalid argument was supplied to create a file handle. Try uploading the file again or contact technical support for assistance.
10551803	An unknown error occurred. Retry file upload operation again or contact technical support for assistance.
10551804	Internal error. There is not sufficient space in the file upload directory to upload this file. Contact technical support for assistance.
10551805	Internal error in JAIL setup. Contact technical support for assistance.
10551806	Internal error. Failed to write to file in the webjail directory. Contact technical support for assistance.
10551807	The request must only contain a single file. More than one file per request is not supported.
10551808	The request must be of type multipart/form-data.
10551892	Package upload failed due to an unhealthy node. Restore the node to a healthy state, then retry the operation.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster software

Cluster software download endpoint overview

Overview

You can use this API to download a software or firmware package from the server and to check the status of the software or firmware download.

Examples

Downloading the software package

The following example shows how to download the software or firmware package from an HTTP or FTP server. If required, provide the url, username, and password to start the download of the package to the cluster.

```
# The API:
/api/cluster/software/download

# The call:
curl -X POST "https://<mgmt-
ip>/api/cluster/software/download?return_timeout=0" -H "accept:
application/json" -H "Content-Type: application/hal+json" -d '{ "url":
"http://server/package", "username": "admin", "password": "*********"}'

# The response:
{
"job": {
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
}
```

The call to download the software or firmware package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-
005056956dfc" -H "accept: application/hal+json"

# The response:
{
"uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
"description": "POST /api/cluster/software/download",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
  }
}
}
```

Checking the progress of the software package being downloaded from an HTTP or FTP server

The following example shows how to retrieve the progress status of the software package that is being downloaded from a HTTP or FTP server.

```
# The API:
/api/cluster/software/download

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/download" -H "accept:
application/hal+json"

# The response:
{
"state": "running",
"message": "Package download in progress",
"code": 10551382,
"_links": {
  "self": {
    "href": "/api/cluster/software/download"
  }
}
}
```

Learn more

- DOC /cluster/software/download

Manage cluster software

Cluster software history endpoint overview

Overview

You can use this API to retrieve the history details for software installation requests.

Examples

Retrieving software installation history information

The following example shows how to:

- Retrieve the software package installation history information.
- Display specific node level software installation history information.
- Provide all the attributes by default in response when the self referential link is not present.

```
# The API:
/api/cluster/software/history

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/history" -H "accept:
application/hal+json"

# The response:
{
"node": {
  "uuid": "58cd3a2b-af63-11e8-8b0d-0050568e7279",
  "name": "sti70-vsim-ucs165n",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/58cd3a2b-af63-11e8-8b0d-0050568e7279"
    }
  }
},
"start_time": "2018-09-03T16:18:46+05:30",
"state": "successful",
"from_version": "9.4.0",
"to_version": "9.5.0",
"end_time": "2018-05-21T10:14:51+05:30"
}
```

Learn more

- DOC /cluster/software/history

Manage cluster software

Cluster software packages endpoint overview

Overview

You can use this API to retrieve the software packages for a cluster.

Examples

Retrieving cluster software packages information

The following example shows how to retrieve the ONTAP software packages in a cluster.

```
# The API:
/api/cluster/software/packages

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/software/packages?return_records=true&return_timeout=15"
-H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "version": "9.7.0",
    "_links": {
      "self": {
        "href": "/api/cluster/software/packages/9.7.0"
      }
    }
  },
  {
    "version": "9.5.0",
    "_links": {
      "self": {
        "href": "/api/cluster/software/packages/9.5.0"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/software/packages"
  }
}
}
```

Retrieves the software package information for a particular version

The following example shows how to retrieve the details of a given cluster software package.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/packages/9.7.0" -H
"accept: application/hal+json"

# The response:
{
"version": "9.7.0",
"create_time": "2018-05-21T10:06:59+05:30",
"_links": {
  "self": {
    "href": "/api/cluster/software/packages/9.7.0"
  }
}
}
```

Deleting a cluster software package

The following example shows how to delete a package from the cluster. You need to provide the package version that you want to delete. The software package delete creates a job to perform the delete operation.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/software/packages/9.6.0" -H
"accept: application/hal+json"

# The response:
{
"job": {
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
}
```

The call to delete the package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-
005056956dfc" -H "accept: application/hal+json"

# The response:
{
"uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
"description": "DELETE /api/cluster/software/packages/9.6.0",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
  }
}
}
```

Learn more

- DOC /cluster/software/packages

View and update cluster web configurations

Cluster web endpoint overview

Overview

You can use this API to update web services configurations and to retrieve current configurations.

Retrieving the current web services configuration

The cluster web GET API retrieves the current cluster-wide configuration.

Updating the current web services configuration

The cluster web PATCH API updates the current cluster-wide configuration.

Once updated, ONTAP restarts the web services to apply the changes.

When updating the certificate, the certificate UUID of an existing certificate known to ONTAP must be provided. The certificate must be of type "server".

A "client-ca" certificate must be installed on ONTAP to enable "client_enabled".

The following fields can be used to update the cluster-wide configuration:

- enabled
- http_port
- https_port
- http_enabled
- csrf.protection_enabled
- csrf.token.concurrent_limit
- csrf.token.idle_timeout
- csrf.token.max_timeout
- certificate.uuid
- client_enabled
- ocsp_enabled
- hsts.enabled
- hsts.max_age

Examples

Retrieving the cluster-wide web services configuration

```
# API:
GET /api/cluster/web

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/web" -H "accept:
application/hal+json"

# The response:
{
"enabled": true,
"http_port": 80,
"https_port": 443,
"state": "online",
"http_enabled": false,
"csrf": {
  "protection_enabled": true,
  "token": {
    "concurrent_limit": 500,
    "idle_timeout": 900,
    "max_timeout": 650
  }
},
"certificate": {
  "uuid": "a3bb219d-4382-1fe0-9c06-1070568ea23d",
  "name": "cert1",
  "_links": {
    "self": {
      "href": "/api/security/certificates/a3bb219d-4382-1fe0-9c06-
1070568ea23d"
    }
  }
},
"client_enabled": false,
"ocsp_enabled": false,
"hsts": {
  "enabled": true,
  "max_age": 31536000
},
"_links": {
  "self": {
    "href": "/api/cluster/web"
  }
}
}
```

Updating the cluster-wide web services configuration

```
# The API:
PATCH /api/cluster/web

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/web" -d '{ "https_port": 446,
"csrf": { "token": { "concurrent_limit": 600 } } }' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 28 May 2021 09:36:43 GMT
Server: libzapid-httpd
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
```

Retrieve the web services configuration

GET `/cluster/web`

Introduced In: 9.10

Retrieves the web services configuration.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
client_enabled	boolean	Indicates whether client authentication is enabled.

Name	Type	Description
csrf	csrf	
enabled	boolean	Indicates whether remote clients can connect to the web services.
hsts	hsts	
http_enabled	boolean	Indicates whether HTTP is enabled.
http_port	integer	HTTP port for cluster-level web services.
https_port	integer	HTTPS port for cluster-level web services.
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.
per_address_limit	integer	The number of connections that can be processed concurrently from the same remote address.
state	string	State of the cluster-level web services.
wait_queue_capacity	integer	The maximum size of the wait queue for connections exceeding the per-address-limit.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "csrf": {
    "token": {
      "concurrent_limit": 120,
      "idle_timeout": 200,
      "max_timeout": 1200
    }
  },
  "hsts": {
    "max_age": 31536000
  },
  "per_address_limit": 42,
  "state": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

token

Name	Type	Description
concurrent_limit	integer	Maximum number of concurrent CSRF tokens.
idle_timeout	integer	Time for which an unused CSRF token is retained, in seconds.
max_timeout	integer	Time for which an unused CSRF token, regardless of usage is retained, in seconds.

csrf

Name	Type	Description
protection_enabled	boolean	Indicates whether CSRF protection is enabled.
token	token	

hsts

Name	Type	Description
enabled	boolean	Indicates whether HTTP Strict Transport Security (HSTS) is enabled.
max_age	integer	HTTPS Strict Transport Security (HSTS) max-age value in seconds. The maximum time, in seconds, that the browser should remember that a site is only to be accessed using HTTPS.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the web services configuration

PATCH `/cluster/web`

Introduced In: 9.10

Updates the web services configuration.

Related ONTAP commands

- `system services web modify`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
client_enabled	boolean	Indicates whether client authentication is enabled.
csrf	csrf	
enabled	boolean	Indicates whether remote clients can connect to the web services.

Name	Type	Description
hsts	hsts	
http_enabled	boolean	Indicates whether HTTP is enabled.
http_port	integer	HTTP port for cluster-level web services.
https_port	integer	HTTPS port for cluster-level web services.
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.
per_address_limit	integer	The number of connections that can be processed concurrently from the same remote address.
state	string	State of the cluster-level web services.
wait_queue_capacity	integer	The maximum size of the wait queue for connections exceeding the per-address-limit.

Example request

```
{
  "certificate": {
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "csrf": {
    "token": {
      "concurrent_limit": 120,
      "idle_timeout": 200,
      "max_timeout": 1200
    }
  },
  "hsts": {
    "max_age": 31536000
  },
  "per_address_limit": 42,
  "state": "string"
}
```

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9830406	Reconfiguration of the web services failed.
9830407	The web services failed to restart.
9830408	Reconfiguration and/or restart of the web services failed.

Error Code	Description
9830442	Client authentication cannot be enabled without a client ca certificate.
9830463	The cluster must be fully upgraded before modifying this resource.
9830464	HTTP cannot be enabled when FIPS is also enabled.
9830483	The CSRF token timeout is invalid.
9830484	The maximum concurrent CSRF token count cannot be lower than 100.
9830485	The CSRF idle timeout cannot be greater than the CSRF absolute timeout.
9830486	CSRF requires an effective cluster version of 9.7 or later.
9830487	The HTTP and HTTPS ports must not have the same value.
9830488	The certificate is not a "server" certificate.
9830489	The certificate does not exist for the given SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

token

Name	Type	Description
concurrent_limit	integer	Maximum number of concurrent CSRF tokens.
idle_timeout	integer	Time for which an unused CSRF token is retained, in seconds.
max_timeout	integer	Time for which an unused CSRF token, regardless of usage is retained, in seconds.

csrf

Name	Type	Description
protection_enabled	boolean	Indicates whether CSRF protection is enabled.
token	token	

hsts

Name	Type	Description
enabled	boolean	Indicates whether HTTP Strict Transport Security (HSTS) is enabled.

Name	Type	Description
max_age	integer	HTTPS Strict Transport Security (HSTS) max-age value in seconds. The maximum time, in seconds, that the browser should remember that a site is only to be accessed using HTTPS.

web

Name	Type	Description
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
client_enabled	boolean	Indicates whether client authentication is enabled.
csrf	csrf	
enabled	boolean	Indicates whether remote clients can connect to the web services.
hsts	hsts	
http_enabled	boolean	Indicates whether HTTP is enabled.
http_port	integer	HTTP port for cluster-level web services.
https_port	integer	HTTPS port for cluster-level web services.
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.
per_address_limit	integer	The number of connections that can be processed concurrently from the same remote address.
state	string	State of the cluster-level web services.
wait_queue_capacity	integer	The maximum size of the wait queue for connections exceeding the per-address-limit.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View tags used for resources

Resource-tags endpoint overview

Overview

You can use this endpoint to list all of the tags that have been used on resources in the API. See the section labelled Tagging Resources for Tracking Purposes to find out more information about how to tag a resource.

Examples

The following examples show some ways that this endpoint can be used.

List all of the used tags

```
# The API:
/api/resource-tags

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-tags"

# The response:
{
"records": [
  {
    "value": "team:accounting",
    "num_resources": 2,
    "_links": {
      "self": {
        "href": "/api/resource-tags/team%3Aaccounting"
      }
    }
  },
  {
    "value": "environment:test",
    "num_resources": 5,
    "_links": {
      "self": {
        "href": "/api/resource-tags/environment%3Atest"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/resource-tags"
  }
}
}
```

Find tags that are being used by at least 3 resources

```
# The API:
/api/resource-tags

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-tags?num_resources=>=3"

# The response:
{
"records": [
  {
    "value": "environment:test",
    "num_resources": 5,
    "_links": {
      "self": {
        "href": "/api/resource-tags/environment%3Atest"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/resource-tags?num_resources=>=3"
  }
}
}
```

Retrieve the tags currently used for resources

GET `/resource-tags`

Introduced In: 9.13

Retrieves the tags currently being used for resources in the API.

Parameters

Name	Type	In	Required	Description
value	string	query	False	Filter by value • maxLength: 200
num_resources	integer	query	False	Filter by num_resources • Min value: 1

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Min value: 0 • Default value: 1 • Max value: 120
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[resource_tag]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "value": "team:accounting"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

resource_tag

A resource tag is a way to group resources in the API together for identification or tracking purposes.

Name	Type	Description
num_resources	integer	The number of resources that are currently using this tag.
value	string	A key:value formatted string representing the tag's name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage resource tags

Resource-tags resource_tag.value resources endpoint overview

Overview

You can use this endpoint to list all of the resources in the API that have been tagged with a particular tag value and to create new tags on existing resources. Each resource has a limit of 64 tags that cannot be exceeded. See the section labelled Tagging Resources for Tracking Purposes to find out more information about how to tag a resource.

Examples

The following examples show some ways that this endpoint can be used.

List all resources that are tagged for the test environment.

```
# The API:
/api/resource-tags/environment:test/resources

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-
tags/environment:test/resources"

# The response:
{
"records": [
  {
    "href": "/api/storage/volumes/558949d1-d4cf-445e-ada5-e340dee6a581",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F558949d1-
d4cf-445e-ada5-e340dee6a581"
      }
    }
  },
  {
    "href": "/api/svm/svms/7f97a0b1-fe4f-11e8-b9c5-005056a76061",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fsvm%2Fsvms%2F7f97a0b1-fe4f-11e8-
b9c5-005056a76061"
      }
    }
  },
  {
```

```
    "href": "/api/cluster",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fcluster"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/resource-tags/environment:test/resources"
  }
}
}
```

List all volumes that have been tagged for the accounting team

```
# The API:
/api/resource-tags/team:accounting/resources

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources?label=storage_volumes"

# The response:
{
"records": [
  {
    "href": "/api/storage/volumes/558949d1-d4cf-445e-ada5-e340dee6a581",
    "label": "storage_volumes",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F558949d1-
d4cf-445e-ada5-e340dee6a581"
      }
    }
  },
  {
    "href": "/api/storage/volumes/64750961-fda7-4327-9f16-00034c3f5ad2",
    "label": "storage_volumes",
    "_links": {
```

```
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F64750961-
fda7-4327-9f16-00034c3f5ad2"
      }
    }
  },
  {
    "href": "/api/storage/volumes/bee17b91-f90a-4854-b146-8b102a0a9882",
    "label": "storage_volumes",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2Fbee17b91-
f90a-4854-b146-8b102a0a9882"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/resource-
tags/environment:test/resources?label=storage_volumes"
  }
}
}
```


Create a new tag on a volume

```
# The API:
/api/resource-tags/team:accounting/resources

# The call:
curl -X POST "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources" -d '{"href":
"/api/storage/volumes/f288168e-bd3e-11ed-9516-005056acd4e8"}'

# The response
{
"num_records": 1,
"records": [
  {
    "href": "/api/storage/volumes/f288168e-bd3e-11ed-9516-005056acd4e8",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/team:accounting/resources/%2Fapi%2Fstorage%2Fvolumes%2Ff288168e-bd3e-
11ed-9516-005056acd4e8"
      }
    }
  }
]
}
```

Delete a new tag on a volume

```
# The API:
/resource-tags/{resource_tag.value}/resources/{href}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources/%2Fapi%2Fstorage%2Fvolumes%2Ff288168e-bd3e-
11ed-9516-005056acd4e8"
```

Retrieve the resources for a tag

GET `/resource-tags/{resource_tag.value}/resources`

Introduced In: 9.13

Retrieves the resources for a specific tag

Parameters

Name	Type	In	Required	Description
resource_tag.value	string	path	True	• format: key:value
value	string	query	False	Filter by value • Introduced in: 9.16
label	string	query	False	Filter by label
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
href	string	query	False	Filter by href • Introduced in: 9.16
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[resource_tag_resource]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "href": "string",
      "label": "volume",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "value": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs
to the cluster as a whole), then this property will be empty and unreturned.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

resource_tag_resource

This object provides a pointer to the tagged resource in the API. Details about the tagged object are available by querying
the address of the href property.

Name	Type	Description
href	string	This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties.
label	string	This is a human-readable classifier representing the type of thing that is pointed to by the href.
svm	svm	If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.
value	string	The text value of the tag formatted as `key:value`.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new tag for a resource

POST `/resource-tags/{resource_tag.value}/resources`

Introduced In: 9.13

Creates a new tag on a specific resource.

Parameters

Name	Type	In	Required	Description
resource_tag.value	string	path	True	• format: key:value
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
href	string	This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties.
label	string	This is a human-readable classifier representing the type of thing that is pointed to by the href.
svm	svm	If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.
value	string	The text value of the tag formatted as `key:value`.

Example request

```
{
  "href": "string",
  "label": "volume",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "value": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262257	The API specified in the href cannot be found.
262258	The resource specified in the href does not support tagging.
262259	The specified href cannot be parsed.
262260	The provided href is missing a key to a specific resource.
262261	The specified href points to a resource that does not exist.
262262	The specified href cannot be an empty string.
262263	Tag key-value pairs cannot be longer than 200 characters.

Error Code	Description
263148	Specified resource cannot be tagged because it reached allowed tags limit.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs
to the cluster as a whole), then this property will be empty and unreturned.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

resource_tag_resource

This object provides a pointer to the tagged resource in the API. Details about the tagged object are available by querying
the address of the href property.

Name	Type	Description
href	string	This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties.
label	string	This is a human-readable classifier representing the type of thing that is pointed to by the href.

Name	Type	Description
svm	svm	If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.
value	string	The text value of the tag formatted as `key:value`.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a tag for a resource

DELETE `/resource-tags/{resource_tag.value}/resources/{href}`

Introduced In: 9.13

Deletes a specific tag on a specific resource.

Parameters

Name	Type	In	Required	Description
resource_tag.value	string	path	True	• format: key:value

Name	Type	In	Required	Description
href	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a resource for a tag

GET `/resource-tags/{resource_tag.value}/resources/{href}`

Introduced In: 9.13

Retrieves a specific resource for a specific tag.

Parameters

Name	Type	In	Required	Description
resource_tag.value	string	path	True	• format: key:value
href	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
href	string	This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties.
label	string	This is a human-readable classifier representing the type of thing that is pointed to by the href.
svm	svm	If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.
value	string	The text value of the tag formatted as `key:value`.

Example response

```
{
  "href": "string",
  "label": "volume",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "value": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs
to the cluster as a whole), then this property will be empty and unreturned.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve a resource tag

GET `/resource-tags/{value}`

Introduced In: 9.13

Retrieves a specific resource tag.

Parameters

Name	Type	In	Required	Description
value	string	path	True	• format: key:value
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
num_resources	integer	The number of resources that are currently using this tag.
value	string	A key:value formatted string representing the tag's name.

Example response

```
{
  "value": "team:accounting"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

NAS

NAS overview

Overview

These APIs allow you to complete various tasks, including:

- Creating an NFS server for an SVM
- Managing an NFS configuration of an SVM
- Viewing and updating the NFS configuration of an SVM
- Configuring export policies and rules for an SVM
- Managing export policies and rules for an SVM

APIs

NFS

The NFS APIs enable you to create and configure NFS settings for an SVM. You can delete or update NFS configurations, and you can also disable or enable different NFS features as needed.
The export APIs allow you to create and manage export policies for an SVM that enable an administrator to restrict access to volumes for clients that match specific IP addresses and specific authentication types. Export APIs are also used to create export rules for an export policy. The APIs allow each rule to specify the number of mask bits in the client IP address that must be matched for that rule to apply to a particular client request.

The APIs also allow each export rule to specify the authentication types that are required for both read-only and read-write operations.

Kerberos

Kerberos is a protocol designed to provide strong authentication for users and hosts within a client/server environment. The basis of the protocol is a shared, secret-key cryptology system. (Kerberos uses shared-key encryption to ensure the confidentiality of the data. It also uses hashing techniques to ensure the integrity of the data (so that no one can modify the data unless allowed to do so). With the NetApp multiprotocol storage platform, through which clients based on UNIX or Windows can access data using CIFS or NFS, it is crucial to provide the ability to use standard network services for authentication and for identity storage.

To configure an ONTAP system to use Kerberos for NFS, Kerberos must be enabled on a data LIF in the SVM that owns the NFS server. A Kerberos realm needs to be created before enabling Kerberos on a data LIF. (The Kerberos realm is needed so that the cluster knows how to format Kerberos ticket requests.) The Kerberos APIs allow you to define, create, modify, and delete realms for the SVM. The APIs also allow you to enable/disable Kerberos on a data LIF and update the Kerberos interface configuration for a particular data LIF in the SVM.

Manage Active Directory accounts

Protocols active-directory endpoint overview

Overview

You can use this API to display Active Directory account-related information of all SVMs or create a new Active Directory account.

Examples

Retrieving all Active Directory account details of all SVMs

```
# The API:
GET /api/protocols/active-directory

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/active-directory?fields=*" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "9166c7e8-1fcf-11ed-b037-0050568e9b8b",
      "name": "vs1"
    },
    "organizational_unit": "CN=Computers",
    "name": "SERVER1",
    "fqdn": "EXAMPLE.COM",
    "security": {
      "advertised_kdc_encryptions": [
        "des"
      ]
    }
  }
],
"num_records": 1
}
```

Create a new Active Directory account

```
# The API:
POST /api/protocols/active-directory

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/active-directory" -H
"accept: application/json"
            -d "{  \"force_account_overwrite\": false,  \"fqdn\":
\"example.com\",  \"name\": \"account1\", \"password\": \"password\",
\"svm\": {    \"_links\": {},    \"name\": \"vs1\",    \"uuid\":
\"6fcfe07a-8a93-11ec-927a-0050568e205f\"  },  \"username\":
\"administrator\", \"security\": { \"advertised_kdc_encryptions\": [
\"des\" ] } }"
```

Retrieve Active Directory accounts for all SVMs

GET `/protocols/active-directory`

Introduced In: 9.12

Retrieves Active Directory accounts for all SVMs.

Related ONTAP commands

- `vserver active-directory show`
- `vserver active-directory preferred-dc show`
- `vserver active-directory discovered-servers show`
- `vserver cifs security show`

Parameters

Name	Type	In	Required	Description
security.advertised_kdc_encryptions	string	query	False	Filter by security.advertised_kdc_encryptions • Introduced in: 9.17
preferred_dcs.fqdn	string	query	False	Filter by preferred_dcs.fqdn • maxLength: 254

Name	Type	In	Required	Description
preferred_dcs.server_ip	string	query	False	Filter by preferred_dcs.server_ip
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
discovered_servers.state	string	query	False	Filter by discovered_servers.state
discovered_servers.server.ip	string	query	False	Filter by discovered_servers.server.ip
discovered_servers.server.name	string	query	False	Filter by discovered_servers.server.name
discovered_servers.server.type	string	query	False	Filter by discovered_servers.server.type
discovered_servers.node.uuid	string	query	False	Filter by discovered_servers.node.uuid
discovered_servers.node.name	string	query	False	Filter by discovered_servers.node.name
discovered_servers.domain	string	query	False	Filter by discovered_servers.domain
discovered_servers.preference	string	query	False	Filter by discovered_servers.preference
organizational_unit	string	query	False	Filter by organizational_unit
name	string	query	False	Filter by name • maxLength: 15

Name	Type	In	Required	Description
fqdn	string	query	False	Filter by fqdn • maxLength: 254
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of Active Directory records.
records	array[active_directory]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "discovered_servers": [
        {
          "domain": "server1.com",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "preference": "preferred",
          "server": {
            "ip": "7.4.3.1",
            "name": "scspk0659102001",
            "type": "kerberos"
          },
          "state": "ok"
        }
      ],
      "force_account_overwrite": "",
      "fqdn": "server1.com",
      "name": "account1",
      "organizational_unit": "CN=Test",
      "preferred_dcs": [
        {
          "fqdn": "test.com",
          "server_ip": "4.4.4.4"
        }
      ],
      "security": {
```

```
        "advertised_kdc_encryptions": [
          "string"
        ]
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

active_directory_discovered_server_reference

Name	Type	Description
ip	string	The IP address of the server that was discovered.
name	string	Server Name
type	string	The type of the server that was discovered.

discovered_servers

Name	Type	Description
domain	string	The Active Directory domain that the discovered server is a member of.
node	node	

Name	Type	Description
preference	string	The preference level of the server that was discovered.
server	active_directory_discovered_server_reference	
state	string	The status of the connection to the server that was discovered.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

active_directory

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.

Name	Type	Description
fqdn	string	Fully qualified domain name.
name	string	Active Directory (AD) account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account will be created.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an Active Directory account for an SVM

POST `/protocols/active-directory`

Introduced In: 9.12

Creates an Active Directory account for a given SVM.

Related ONTAP commands

- `vserver active-directory create`

Important notes

- Active Directory account creation is asynchronous. Response contains Task UUID and Link that can be queried to get the status.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
name	string	Active Directory (AD) account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account will be created.
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
username	string	Administrator username required for Active Directory account creation, modification and deletion.

Example request


```
{
  "discovered_servers": [
    {
      "domain": "server1.com",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "preferred",
      "server": {
        "ip": "7.4.3.1",
        "name": "scspk0659102001",
        "type": "kerberos"
      },
      "state": "ok"
    }
  ],
  "force_account_overwrite": "",
  "fqdn": "server1.com",
  "name": "account1",
  "organizational_unit": "CN=Test",
  "password": "testpwd",
  "preferred_dcs": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ],
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ]
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "username": "admin"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
name	string	Active Directory (AD) account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account will be created.
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
svm	svm	SVM, applies only to SVM-scoped objects.
username	string	Administrator username required for Active Directory account creation, modification and deletion.

Example response


```
{
  "discovered_servers": [
    {
      "domain": "server1.com",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "preferred",
      "server": {
        "ip": "7.4.3.1",
        "name": "scspk0659102001",
        "type": "kerberos"
      },
      "state": "ok"
    }
  ],
  "force_account_overwrite": "",
  "fqdn": "server1.com",
  "name": "account1",
  "organizational_unit": "CN=Test",
  "password": "testpwd",
  "preferred_dcs": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ],
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ]
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "username": "admin"
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655562	The NetBIOS name cannot be longer than 15 characters.
655915	A CIFS server for this SVM already exists. Having both a CIFS server and an Active Directory account for the same SVM is not supported. Use the \"vserver cifs delete\" command to delete the existing CIFS server and try the command again.
656464	Failed to create the Active Directory machine account. Reason: Invalid Credentials.
656465	Failed to create the Active Directory machine account. Reason: An account with this name already exists.
656466	Failed to create the Active Directory machine account. Reason: Unable to connect to any domain controllers.
656467	Failed to create the Active Directory machine account. Reason: Organizational-Unit not found.
656490	Unable to create the Active Directory account. The Active Directory account name is already used by another SVM.
656491	Failed to create the Active Directory machine account. Reason: This operation is supported only on data SVMs.
656494	The Active Directory was created but was not fully configured.
656495	Failed to update Active Directory security settings for SVM.
656496	Failed to update Active Directory security settings for SVM. Reason: KDC has no support for encryption type.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

active_directory_discovered_server_reference

Name	Type	Description
ip	string	The IP address of the server that was discovered.
name	string	Server Name
type	string	The type of the server that was discovered.

discovered_servers

Name	Type	Description
domain	string	The Active Directory domain that the discovered server is a member of.
node	node	
preference	string	The preference level of the server that was discovered.
server	active_directory_discovered_server_reference	
state	string	The status of the connection to the server that was discovered.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

active_directory

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
name	string	Active Directory (AD) account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account will be created.

Name	Type	Description
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
svm	svm	SVM, applies only to SVM-scoped objects.
username	string	Administrator username required for Active Directory account creation, modification and deletion.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Active Directory accounts for an SVM

Protocols active-directory svm.uuid endpoint overview

Overview

You can use this API to display or modify Active Directory account details of the specified SVM.

It can also be used to delete an Active Directory account for the specified SVM.

Examples

Retrieving all Active Directory account details of a specific SVM

```
# The API:
GET /api/protocols/active-directory/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/active-directory/6dd78167-
c907-11eb-b2bf-0050568e7324" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "6dd78167-c907-11eb-b2bf-0050568e7324",
  "name": "vs1"
},
"organizational_unit": "CN=Computers",
"name": "ACCOUNT1",
"fqdn": "EXAMPLE.COM",
"security": {
  "advertised_kdc_encryptions": [
    "des"
  ]
}
}
```

Update the Active Directory account details of a specific SVM

```
# The API:
PATCH /api/protocols/active-directory/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/active-directory/6dd78167-
c907-11eb-b2bf-0050568e7324" -H "accept: application/json"
            -d "{  \"force_account_overwrite\": true,  \"fqdn\":
\"example.com\",  \"password\": \"password\",  \"username\":
\"administrator\", \"security\": { \"advertised_kdc_encryptions\": [
\"des\" ] } }"
```

Delete an Active Directory account of a specific SVM

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/6dd78167-
c907-11eb-b2bf-0050568e7324" -H "accept: application/json" -d "{
\"password\": \"password\",  \"username\": \"administrator\"}"
```

Delete an Active Directory account for an SVM

DELETE `/protocols/active-directory/{svm.uuid}`

Introduced In: 9.12

Deletes the Active Directory account for a given SVM.

Related ONTAP commands

- `vserver active-directory delete`

Important notes

- Active Directory account deletion is asynchronous. Response contains Task UUID and Link that can be queried to get the status.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
password	string	Administrator password required for Active Directory account creation.
username	string	Administrator username required for Active Directory account creation.

Example request

```
{
  "password": "testpwd",
  "username": "admin"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655414	Failed to remove Active Directory machine.
655431	Username cannot be empty.
655432	Password cannot be empty.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

active_directory_delete

Name	Type	Description
password	string	Administrator password required for Active Directory account creation.
username	string	Administrator username required for Active Directory account creation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an Active Directory account for an SVM

GET `/protocols/active-directory/{svm.uuid}`

Introduced In: 9.12

Retrieves the Active Directory account for a given SVM.

Related ONTAP commands

- `vserver active-directory show`
- `vserver active-directory preferred-dc show`

- `vserver active-directory discovered-servers show`
- `vserver active-directory discovered-servers reset-servers`
- `vserver cifs security show`

Parameters

Name	Type	In	Required	Description
reset_discovered_servers	boolean	query	False	Force a rediscovery. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
fqdn	string	Fully qualified domain name.
name	string	Active Directory (AD) account NetBIOS name.
organizational_unit	string	Organizational unit under which the Active Directory account will be created.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "discovered_servers": [
    {
      "domain": "server1.com",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "preferred",
      "server": {
        "ip": "7.4.3.1",
        "name": "scspk0659102001",
        "type": "kerberos"
      },
      "state": "ok"
    }
  ],
  "force_account_overwrite": "",
  "fqdn": "server1.com",
  "name": "account1",
  "organizational_unit": "CN=Test",
  "preferred_dcs": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ],
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ]
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
```

```
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

active_directory_discovered_server_reference

Name	Type	Description
ip	string	The IP address of the server that was discovered.
name	string	Server Name
type	string	The type of the server that was discovered.

discovered_servers

Name	Type	Description
domain	string	The Active Directory domain that the discovered server is a member of.
node	node	
preference	string	The preference level of the server that was discovered.
server	active_directory_discovered_server_reference	

Name	Type	Description
state	string	The status of the connection to the server that was discovered.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Modify an Active Directory account for an SVM

PATCH `/protocols/active-directory/{svm.uuid}`

Introduced In: 9.12

Modifies the Active Directory account for a given SVM.

Related ONTAP commands

- `vserver active-directory modify`
- `vserver cifs security modify`

Important notes

- Patching Active Directory account is asynchronous. Response contains Task UUID and Link that can be queried to get the status.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.

Name	Type	Description
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
username	string	Administrator username required for Active Directory account creation, modification and deletion.

Example request

```
{
  "discovered_servers": [
    {
      "domain": "server1.com",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "preferred",
      "server": {
        "ip": "7.4.3.1",
        "name": "scspk0659102001",
        "type": "kerberos"
      },
      "state": "ok"
    }
  ],
  "force_account_overwrite": "",
  "fqdn": "server1.com",
  "password": "testpwd",
  "preferred_dcs": [
    {}
  ],
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ]
  },
  "username": "admin"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.

Name	Type	Description
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
username	string	Administrator username required for Active Directory account creation, modification and deletion.

Example response

```
{
  "discovered_servers": [
    {
      "domain": "server1.com",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "preferred",
      "server": {
        "ip": "7.4.3.1",
        "name": "scspk0659102001",
        "type": "kerberos"
      },
      "state": "ok"
    }
  ],
  "force_account_overwrite": "",
  "fqdn": "server1.com",
  "password": "testpwd",
  "preferred_dcs": [
    {}
  ],
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ]
  },
  "username": "admin"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
656464	Failed to modify the Active Directory machine account. Reason: Invalid Credentials.

Error Code	Description
656465	Failed to create the Active Directory machine account. Reason: An account with this name already exists.
656466	Failed to create the Active Directory machine account. Reason: Unable to connect to any domain controllers.
656467	Failed to modify the Active Directory machine account. Reason: Organizational-Unit not found.
656478	Failed to create the Active Directory machine account. Reason: KDC has no support for encryption type.
656490	Unable to modify the Active Directory account. The Active Directory account name is already used by another SVM.
656495	Failed to update Active Directory security settings for SVM.
656496	Failed to update Active Directory security settings for SVM. Reason: KDC has no support for encryption type.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

active_directory_discovered_server_reference

Name	Type	Description
ip	string	The IP address of the server that was discovered.
name	string	Server Name
type	string	The type of the server that was discovered.

discovered_servers

Name	Type	Description
domain	string	The Active Directory domain that the discovered server is a member of.
node	node	
preference	string	The preference level of the server that was discovered.
server	active_directory_discovered_server_reference	
state	string	The status of the connection to the server that was discovered.

preferred_dcs

active_directory_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

active_directory

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
force_account_overwrite	boolean	If set to true and a machine account exists with the same name as specified in "name" in Active Directory, it will be overwritten and reused.
fqdn	string	Fully qualified domain name.
password	string	Administrator password required for Active Directory account creation, modification and deletion.
preferred_dcs	array[preferred_dcs]	Specifies the preferred domain controller (DC) records.
security	active_directory_security	
username	string	Administrator username required for Active Directory account creation, modification and deletion.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Active Directory domain controllers

Protocols active-directory svm.uuid preferred-domain-controllers endpoint overview

Overview

You can use this API to display the preferred DC configuration of an SVM.

Retrieving all the preferred DC configurations of an SVM

The preferred DC GET endpoint retrieves all the configurations for a specific SVM.

Examples

Retrieving all fields for all the preferred DC configurations of an SVM

```
# The API:
GET /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fields=*" -H
"accept: application/json"

# The response:
{
 "records": [
{
  "svm": {
    "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
    "name": "svm1"
  },
  "fqdn": "host1",
  "server_ip": "4.4.4.4"
},
{
  "svm": {
    "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
    "name": "svm1"
  },
  "fqdn": "host2",
  "server_ip": "11.11.11.11"
}
],
 "num_records": 2
}
```

Retrieving the preferred DC configuration of a specific SVM, "fqdn" and "server_ip"

```
# The API:
GET /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers/{fqdn}/{server_ip}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/host1/4.4.4.4" -H
"accept: application/json"

# The response:
{
"svm": {
  "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
  "name": "svm1"
},
"fqdn": "host1",
"server_ip": "4.4.4.4"
}
```

Creating a new preferred DC configuration

The preferred DC POST endpoint creates a new configuration. Both bulk and instance POST is supported.

Examples

Creating a single preferred DC configuration

```
# The API:
POST /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-
controllers?skip_config_validation=true&return_records=false" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"fqdn\":
\"testing.com\", \"server_ip\": \"1.1.1.1\"}"
```

Deleting an existing preferred DC configuration

The preferred DC DELETE endpoint deletes an existing configuration. Both bulk and instance delete is supported.

Examples

Deleting the preferred DC configuration of a specific SVM, "fqdn" and "server_ip"

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers/{fqdn}/{server_ip}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/sample/4.4.4.4"
```

Deleting the preferred DC configurations of a specific SVM and "fqdn"

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fqdn=sampl"
```

Deleting all preferred DC configurations of a specific SVM

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fqdn=*"
```

Deleting the preferred DC configurations of a specific SVM, "fqdn" and set of "server_ips"

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-
controllers/?fqdn=sample&server_ip=3.3.3.3&#124;4.4.4.4&#124;1.1.1.1&#124;
2.2.2.2"
```

Deleting the preferred DC configurations of a specific SVM and set of "server_ips"

```
# The API:
DELETE /api/protocols/active-directory/{svm.uuid}/preferred-domain-
controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/active-directory/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-
controllers/?server_ip=3.3.3.3&#124;4.4.4.4&#124;1.1.1.1&#124;2.2.2.2"
```

Retrieve an Active Directory preferred DC configuration for an SVM

GET `/protocols/active-directory/{svm.uuid}/preferred-domain-controllers`

Introduced In: 9.12

Retrieves the Active Directory preferred DC configuration of an SVM.

Related ONTAP commands

- `vserver active-directory preferred-dc show`

Parameters

Name	Type	In	Required	Description
fqdn	string	query	False	Filter by fqdn • maxLength: 254
server_ip	string	query	False	Filter by server_ip
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Active Directory preferred DC records.
records	array[active_directory_preferred_dc]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

active_directory_preferred_dc

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an Active Directory preferred DC configuration for an SVM

POST `/protocols/active-directory/{svm.uuid}/preferred-domain-controllers`

Introduced In: 9.12

Creates an Active Directory preferred DC configuration for an SVM.

Required properties

- `svm.uuid` - Existing SVM in which to create the preferred DC.
- `fqdn` - Fully Qualified Domain Name.
- `server_ip` - IPv4/IPv6 address of the preferred DC.

The following parameters are optional:

- skip_config_validation

Related ONTAP commands

- `vserver active-directory preferred-dc add`

Parameters

Name	Type	In	Required	Description
skip_config_validation	boolean	query	False	Skip the validation of the specified preferred DC configuration. • Default value:
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.

Name	Type	Description
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

Example request

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

Example response

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4"
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655366	Invalid domain controller.
655506	Failed to add preferred-dc.
655918	The fully qualified domain name cannot be longer than 254 bytes.
656407	Failed to validate preferred-dc.
656408	RPC failure occurred during preferred-dc config validation.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

active_directory_preferred_dc

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an Active Directory preferred DC configuration for an SVM and domain

DELETE `/protocols/active-directory/{svm.uuid}/preferred-domain-controllers/{fqdn}/{server_ip}`

Introduced In: 9.12

Deletes the Active Directory preferred DC configuration of the specified SVM and domain.

Related ONTAP commands

- `vserver active-directory preferred-dc delete`

Parameters

Name	Type	In	Required	Description
fqdn	string	path	True	Fully Qualified Domain Name.
server_ip	string	path	True	DC's IP address.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655507	Failed to remove preferred-dc.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an Active Directory preferred DC configuration for an SVM and domain

GET `/protocols/active-directory/{svm.uuid}/preferred-domain-controllers/{fqdn}/{server_ip}`

Introduced In: 9.12

Retrieves the Active Directory preferred DC configuration of an SVM.

Related ONTAP commands

- `vserver active-directory preferred-dc show`

Parameters

Name	Type	In	Required	Description
fqdn	string	path	True	Fully Qualified Domain Name.
server_ip	string	path	True	DC's IP address.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred DC. The address can be either an IPv4 or an IPv6 address.

Example response

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NAS audit configurations

Protocols audit endpoint overview

Overview

Auditing for NAS events is a security measure that enables you to track and log certain CIFS and NFS events on storage virtual machines (SVMs). This helps you track potential security problems and provides evidence of any security breaches.

Examples

Creating an audit entry with log rotation size and log retention count

To create an audit entry with log rotation size and log retention count, use the following API. Note the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/audit/

# The call:
```

```
curl -X POST "https://<mgmt-ip>/api/protocols/audit" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
true, \"events\": { \"async_delete\": false, \"audit_policy_change\":
true, \"authorization_policy\": false, \"cap_staging\": false,
\"cifs_logon_logoff\": true, \"file_operations\": true, \"file_share\":
false, \"security_group\": false, \"user_account\": false },
\"guarantee\": true, \"log\": { \"format\": \"evtx\", \"retention\": {
\"count\": 10 }, \"rotation\": { \"size\": 2048000 }}, \"log_path\":
\"/\", \"svm\": { \"name\": \"vs1\", \"uuid\": \"ec650e97-156e-11e9-abcb-
005056bbd0bf\" }}"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "enabled": true,
    "events": {
      "authorization_policy": false,
      "cap_staging": false,
      "cifs_logon_logoff": true,
      "file_operations": true,
      "file_share": false,
      "security_group": false,
      "user_account": false,
      "audit_policy_change": true,
      "async_delete": false
    },
    "log": {
      "format": "evtx",
      "rotation": {
        "size": 2048000
      },
      "retention": {
        "count": 10,
        "duration": "0s"
      }
    },
    "log_path": "/",
    "guarantee": true
  }
],
"num_records": 1
```

```
}
```

Creating an audit entry with log rotation schedule and log retention duration

To create an audit entry with log rotation schedule and log retention duration, use the following API. Note that the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/audit/

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/audit" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
false, \"events\": { \"async_delete\": false, \"audit_policy_change\":
true, \"authorization_policy\": false, \"cap_staging\": false,
\"cifs_logon_logoff\": true, \"file_operations\": true, \"file_share\":
false, \"security_group\": false, \"user_account\": false },
\"guarantee\": true, \"log\": { \"format\": \"xml\", \"retention\": {
\"duration\": \"P4DT12H30M5S\" }, \"rotation\": { \"schedule\": {
\"days\": [1, 5, 10, 15], \"hours\": [0, 1, 6, 12, 18, 23], \"minutes\":
[10, 15, 30, 45, 59], \"months\": [0], \"weekdays\": [0, 2, 5] } } },
\"log_path\": \"/\", \"svm\": { \"name\": \"vs3\", \"uuid\": \"a8d64674-
13fc-11e9-87b1-005056a7ae7e\" }}"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "enabled": true,
    "events": {
      "authorization_policy": false,
      "cap_staging": false,
      "cifs_logon_logoff": true,
      "file_operations": true,
      "file_share": false,
      "security_group": false,
      "user_account": false,
      "audit_policy_change": true,
      "async_delete": false
```

```
    },
    "log": {
      "format": "xml",
      "rotation": {
        "schedule": {
          "minutes": [
            10,
            15,
            30,
            45,
            59
          ],
          "hours": [
            0,
            1,
            6,
            12,
            18,
            23
          ],
          "weekdays": [
            0,
            2,
            5
          ],
          "days": [
            1,
            5,
            10,
            15
          ],
          "months": [
            0
          ]
        }
      },
      "retention": {
        "count": 0,
        "duration": "P4DT12H30M5S"
      }
    },
    "log_path": "/",
    "guarantee": true
  }
],
"num_records": 1
```

```
}
```

Retrieving an audit configuration for all SVMs in the cluster

```
# The API:
GET /api/protocols/audit/

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/audit?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "enabled": true,
    "events": {
      "authorization_policy": false,
      "cap_staging": false,
      "cifs_logon_logoff": true,
      "file_operations": true,
      "file_share": false,
      "security_group": false,
      "user_account": false,
      "audit_policy_change": true,
      "async_delete": false
    },
    "log": {
      "format": "evtx",
      "rotation": {
        "size": 2048000
      },
      "retention": {
        "count": 10,
        "duration": "0s"
      }
    },
```

```
    "log_path": "/",
    "guarantee": true,
    "charge_qos": false
  },
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "enabled": true,
    "events": {
      "authorization_policy": false,
      "cap_staging": false,
      "cifs_logon_logoff": true,
      "file_operations": true,
      "file_share": false,
      "security_group": false,
      "user_account": false,
      "audit_policy_change": true,
      "async_delete": false
    },
    "log": {
      "format": "xml",
      "rotation": {
        "schedule": {
          "minutes": [
            10,
            15,
            30,
            45,
            59
          ],
          "hours": [
            0,
            1,
            6,
            12,
            18,
            23
          ],
          "weekdays": [
            0,
            2,
            5
          ],
          "days": [
```

```
            1,
            5,
            10,
            15
          ],
          "months": [
            0
          ]
        }
      },
      "retention": {
        "count": 0,
        "duration": "P4DT12H30M5S"
      }
    },
    "log_path": "/",
    "guarantee": true,
    "charge_qos": false
  }
],
"num_records": 2
}
```

Retrieving specific entries with event list as cifs-logon-logoff, file-ops = true for an SVM

The configuration returned is identified by the events in the list of audit configurations for an SVM.

```
# The API:
GET /api/protocols/audit/

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/audit?events.file_operations=true&events.cifs_logon_logo
ff=true&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "events": {
      "cifs_logon_logoff": true,
      "file_operations": true
    }
  },
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "events": {
      "cifs_logon_logoff": true,
      "file_operations": true
    }
  }
],
"num_records": 2
}
```

Retrieving a specific audit configuration for an SVM

The configuration returned is identified by the UUID of its SVM.

```
# The API:
GET /api/protocols/audit/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
  "name": "vs1"
},
"enabled": true,
"events": {
  "authorization_policy": false,
  "cap_staging": false,
  "cifs_logon_logoff": true,
  "file_operations": true,
  "file_share" : false,
  "security_group": false,
  "user_account": false,
  "audit_policy_change": true,
  "async_delete": false
},
"log": {
  "format": "evtx",
  "rotation": {
    "size": 2048000
  },
  "retention": {
    "count": 10,
    "duration": "0s"
  }
},
"log_path": "/",
"guarantee": true,
"charge_qos": false
}
```

Updating a specific audit configuration of an SVM

The configuration is identified by the UUID of its SVM and the provided information is updated.

```
# The API:
PATCH /api/protocols/audit/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"enabled\": false}"

# The response:
{
"job": {
  "uuid": "9938d743-d566-11eb-ad60-0050568e5902",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9938d743-d566-11eb-ad60-0050568e5902"
    }
  }
}
}
```

Deleting a specific audit configuration for an SVM

The entry to be deleted is identified by the UUID of its SVM.

```
# The API:
DELETE /api/protocols/audit/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf?force=true" -H "accept: application/json"

# The response:
{
"job": {
  "uuid": "9938d743-d566-11eb-ad60-0050568e5902",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9938d743-d566-11eb-ad60-0050568e5902"
    }
  }
}
}
```

Retrieve audit configurations

GET `/protocols/audit`

Introduced In: 9.6

Retrieves audit configurations.

Related ONTAP commands

- `vserver audit show`

Learn more

- DOC /protocols/audit

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
log.format	string	query	False	Filter by log.format

Name	Type	In	Required	Description
log.retention.count	integer	query	False	Filter by log.retention.count
log.retention.duration	string	query	False	Filter by log.retention.duration
log.rotation.schedule.hours	integer	query	False	Filter by log.rotation.schedule.hours • Max value: 23 • Min value: 0
log.rotation.schedule.months	integer	query	False	Filter by log.rotation.schedule.months • Max value: 12 • Min value: 1
log.rotation.schedule.minutes	integer	query	False	Filter by log.rotation.schedule.minutes • Max value: 59 • Min value: 0
log.rotation.schedule.weekdays	integer	query	False	Filter by log.rotation.schedule.weekdays • Max value: 6 • Min value: 0
log.rotation.schedule.days	integer	query	False	Filter by log.rotation.schedule.days • Max value: 31 • Min value: 1
log.rotation.size	integer	query	False	Filter by log.rotation.size
log_path	string	query	False	Filter by log_path

Name	Type	In	Required	Description
guarantee	boolean	query	False	Filter by guarantee • Introduced in: 9.10
charge_qos	boolean	query	False	Filter by charge_qos • Introduced in: 9.16
events.file_operations	boolean	query	False	Filter by events.file_operations
events.audit_policy_change	boolean	query	False	Filter by events.audit_policy_change • Introduced in: 9.16
events.cifs_logon_logoff	boolean	query	False	Filter by events.cifs_logon_logoff
events.file_share	boolean	query	False	Filter by events.file_share
events.user_account	boolean	query	False	Filter by events.user_account
events.async_delete	boolean	query	False	Filter by events.async_delete • Introduced in: 9.16
events.authorization_policy	boolean	query	False	Filter by events.authorization_policy
events.cap_staging	boolean	query	False	Filter by events.cap_staging
events.security_group	boolean	query	False	Filter by events.security_group

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[audit]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "charge_qos": "",
      "guarantee": "",
      "log": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "format": "string",
        "retention": {
          "duration": "P4DT12H30M5S"
        },
        "rotation": {
          "schedule": {
            "days": [
              "integer"
            ],
            "hours": [
              "integer"
            ],
            "minutes": [
              "integer"
            ],
            "months": [
              "integer"
            ],
            "weekdays": [
              "integer"
            ]
          }
        }
      },
```

```
      "log_path": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

events

Name	Type	Description
async_delete	boolean	Volume file async delete events
audit_policy_change	boolean	Audit policy change events
authorization_policy	boolean	Authorization policy change events
cap_staging	boolean	Central access policy staging events
cifs_logon_logoff	boolean	CIFS logon and logoff events
file_operations	boolean	File operation events
file_share	boolean	File share category events
security_group	boolean	Local security group management events
user_account	boolean	Local user account management events

_links

Name	Type	Description
self	href	

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with duration.
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with count.

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

log

Name	Type	Description
_links	_links	
format	string	The format in which the logs are generated by consolidation process. Possible values are: • xml - Data ONTAP-specific XML log format • evtx - Microsoft Windows EVTX log format ◦ Default value: 1 ◦ enum: ["xml", "evtx"] ◦ Introduced in: 9.6 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

audit

Auditing for NAS events is a security measure that enables you to track and log certain CIFS and NFS events on SVMs.

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an audit configuration

POST `/protocols/audit`

Introduced In: 9.6

Creates an audit configuration.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM to which audit configuration is to be created.
- `log_path` - Path in the owning SVM namespace that is used to store audit logs.

Default property values

If not specified in POST, the following default property values are assigned:

- `enabled` - *true*
- `events.authorization_policy` - *false*
- `events.cap_staging` - *false*
- `events.file_share` - *false*
- `events.security_group` - *false*
- `events.user_account` - *false*
- `events.cifs_logon_logoff` - *true*
- `events.audit_policy_change` - *true*
- `events.async_delete` - *false*
- `events.file_operations` - *true*
- `log.format` - *evtx*
- `log.retention.count` - *0*
- `log.retention.duration` - *PT0S*
- `log.rotation.size` - *100MB*

- `log.rotation.now` - *false*
- `guarantee` - *true*
- `charge_qos` - *false*

Related ONTAP commands

- `vserver audit create`
- `vserver audit enable`

Learn more

- DOC /protocols/audit

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "charge_qos": "",
  "guarantee": "",
  "log": {
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262186	Field "log.retention.duration" cannot be used with field "log.retention.count"
262196	Log_rotation_now is not an allowed operation
2621462	The specified SVM does not exist
9699330	An audit configuration already exists
9699337	Audit system internal update is in progress, audit configuration create failed
9699340	SVM UUID lookup failed
9699358	Audit configuration is absent for enabling
9699359	Audit configuration is already enabled
9699360	Final consolidation is in progress, audit enable failed
9699365	Enabling of audit configuration failed
9699370	Auditing was successfully configured, however audit configuration could not be enabled

Error Code	Description
9699384	The specified log_path does not exist
9699385	The log_path must be a directory
9699386	The log_path must be a canonical path in the SVMs namespace
9699387	The log_path cannot be empty
9699388	Rotate size must be greater than or equal to 1024 KB
9699389	The log_path must not contain a symbolic link
9699398	The log_path exceeds a maximum supported length of characters
9699399	The log_path contains an unsupported read-only (DP/LS) volume
9699400	The specified log_path is not a valid destination for SVM
9699402	The log_path contains an unsupported snaplock volume
9699403	The log_path cannot be accessed for validation
9699406	The log_path validation failed
9699409	Failed to enable multiproto.audit.evtxlog.support support capability
9699428	All nodes need to run ONTAP 8.3.0 release to audit CIFS logon-logoff events
9699429	Failed to enable multiproto.audit.cifslogonlogoff.support support capability
9699431	All nodes need to run ONTAP 8.3.0 release to audit CAP staging events
9699432	Failed to enable multiproto.audit.capstaging.support support capability

Definitions

See Definitions

events

Name	Type	Description
async_delete	boolean	Volume file async delete events
audit_policy_change	boolean	Audit policy change events
authorization_policy	boolean	Authorization policy change events
cap_staging	boolean	Central access policy staging events
cifs_logon_logoff	boolean	CIFS logon and logoff events
file_operations	boolean	File operation events
file_share	boolean	File share category events
security_group	boolean	Local security group management events
user_account	boolean	Local user account management events

href

Name	Type	Description
href	string	

_links

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with duration.

Name	Type	Description
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with count.

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.

Name	Type	Description
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

log

Name	Type	Description
format	string	The format in which the logs are generated by consolidation process. Possible values are: • xml - Data ONTAP-specific XML log format • evtx - Microsoft Windows EVTX log format ◦ Default value: 1 ◦ enum: ["xml", "evtx"] ◦ Introduced in: 9.6 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

audit

Auditing for NAS events is a security measure that enables you to track and log certain CIFS and NFS events on SVMs.

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an audit configuration

DELETE `/protocols/audit/{svm.uuid}`

Introduced In: 9.6

Deletes an audit configuration.

Related ONTAP commands

- `vserver audit disable`
- `vserver audit delete`

Learn more

- DOC /protocols/audit

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	Indicates to force delete audit configuration. • Introduced in: 9.10

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9699349	Auditing should be disabled before deleting the audit configuration
9699350	Audit configuration cannot be deleted, final consolidation is in progress
9699410	Failed to disable multiproto.audit.evtxlog.support support capability
9699430	Failed to disable multiproto.audit.cifslogonlogoff.support support capability
9699433	Failed to disable multiproto.audit.capstaging.support support capability

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the audit configuration for an SVM

GET `/protocols/audit/{svm.uuid}`

Introduced In: 9.6

Retrieves an audit configuration for an SVM.

Related ONTAP commands

- `vserver audit show`

Learn more

- DOC /protocols/audit

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "charge_qos": "",
  "guarantee": "",
  "log": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

events

Name	Type	Description
async_delete	boolean	Volume file async delete events
audit_policy_change	boolean	Audit policy change events
authorization_policy	boolean	Authorization policy change events
cap_staging	boolean	Central access policy staging events
cifs_logon_logoff	boolean	CIFS logon and logoff events
file_operations	boolean	File operation events
file_share	boolean	File share category events
security_group	boolean	Local security group management events
user_account	boolean	Local user account management events

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with duration.

Name	Type	Description
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with count.

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.

Name	Type	Description
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

log

Name	Type	Description
_links	_links	
format	string	The format in which the logs are generated by consolidation process. Possible values are: • xml - Data ONTAP-specific XML log format • evtx - Microsoft Windows EVTX log format ◦ Default value: 1 ◦ enum: ["xml", "evtx"] ◦ Introduced in: 9.6 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the audit configuration for an SVM

PATCH `/protocols/audit/{svm.uuid}`

Introduced In: 9.6

Updates an audit configuration for an SVM.

Related ONTAP commands

- `vserver audit modify`

Learn more

- DOC /protocols/audit

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	

Name	Type	Description
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.

Example request

```
{
  "charge_qos": "",
  "guarantee": "",
  "log": {
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262186	Field "log.retention.duration" cannot be used with field "log.retention.count"
9699340	SVM UUID lookup failed
9699343	Audit configuration is absent for modification
9699358	Audit configuration is absent for enabling
9699359	Audit configuration is already enabled
9699360	Final consolidation is in progress, audit enable failed
9699365	Enabling of audit configuration failed
9699373	Audit configuration is absent for disabling
9699374	Audit configuration is already disabled
9699375	Disabling of audit configuration failed
9699384	The specified log_path does not exist

Error Code	Description
9699385	The log_path must be a directory
9699386	The log_path must be a canonical path in the SVMs namespace
9699387	The log_path cannot be empty
9699388	Rotate size must be greater than or equal to 1024 KB
9699389	The log_path must not contain a symbolic link
9699398	The log_path exceeds a maximum supported length of characters
9699399	The log_path contains an unsupported read-only (DP/LS) volume
9699400	The specified log_path is not a valid destination for SVM
9699402	The log_path contains an unsupported snaplock volume
9699403	The log_path cannot be accessed for validation
9699406	The log_path validation failed
9699407	Additional fields are provided
9699409	Failed to enable multiproto.audit.evtxlog.support support capability
9699410	Failed to disable multiproto.audit.evtxlog.support support capability
9699418	Audit configuration is absent for rotate
9699419	Failed to rotate audit log
9699420	Cannot rotate audit log, auditing is not enabled for this SVM
9699428	All nodes need to run ONTAP 8.3.0 release to audit CIFS logon-logoff events
9699429	Failed to enable multiproto.audit.cifslogonlogoff.support support capability
9699430	Failed to disable multiproto.audit.cifslogonlogoff.support support capability
9699431	All nodes need to run ONTAP 8.3.0 release to audit CAP staging events
9699432	Failed to enable multiproto.audit.capstaging.support support capability
9699433	Failed to disable multiproto.audit.capstaging.support support capability

See Definitions

events

Name	Type	Description
async_delete	boolean	Volume file async delete events
audit_policy_change	boolean	Audit policy change events
authorization_policy	boolean	Authorization policy change events
cap_staging	boolean	Central access policy staging events
cifs_logon_logoff	boolean	CIFS logon and logoff events
file_operations	boolean	File operation events
file_share	boolean	File share category events
security_group	boolean	Local security group management events
user_account	boolean	Local user account management events

href

Name	Type	Description
href	string	

_links

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with duration.

Name	Type	Description
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with count.

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.

Name	Type	Description
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

log

Name	Type	Description
format	string	The format in which the logs are generated by consolidation process. Possible values are: • xml - Data ONTAP-specific XML log format • evtx - Microsoft Windows EVTX log format ◦ Default value: 1 ◦ enum: ["xml", "evtx"] ◦ Introduced in: 9.6 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

audit

Auditing for NAS events is a security measure that enables you to track and log certain CIFS and NFS events on SVMs.

Name	Type	Description
charge_qos	boolean	Indicates if audit logs generation should incur an extra charge.
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
guarantee	boolean	Indicates whether there is a strict Guarantee of Auditing
log	log	
log_path	string	The audit log destination path where consolidated audit logs are stored.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 audit configurations

Protocols audit svm.uuid object-store endpoint overview

Overview

S3 events auditing is a security measure that enables you to track and log certain S3 events on storage virtual machines (SVMs). You can track potential security problems and provides evidence of any security breaches.

Examples

Creating an S3 audit entry with log rotation size and log retention count

To create an S3 audit entry with log rotation size and log retention count, use the following API. Note the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf/object-store?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
true, \"events\": { \"data\": false, \"management\": false}, \"log\": {
\"format\": \"json\", \"retention\": { \"count\": 10 }, \"rotation\": {
\"size\": 2048000 }}, \"log_path\": \"/\"}"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "enabled": true,
    "events": {
      "data": false,
      "management": false
    },
    "log": {
      "format": "json",
      "rotation": {
        "size": 2048000
      },
      "retention": {
        "count": 10,
        "duration": "0s"
      }
    },
    "log_path": "/"
  }
],
"num_records": 1
}
```

Creating an S3 audit entry with log rotation schedule and log retention duration

To create an S3 audit entry with log rotation schedule and log retention duration, use the following API. Note that the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/audit/a8d64674-13fc-11e9-
87b1-005056a7ae7e/object-store?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
false, \"events\": { \"data\": true, \"management\": true }, \"log\": {
\"format\": \"json\", \"retention\": { \"duration\": \"P4DT12H30M5S\" },
\"rotation\": { \"schedule\": { \"days\": [1, 5, 10, 15], \"hours\": [0,
1, 6, 12, 18, 23], \"minutes\": [10, 15, 30, 45, 59], \"months\": [0],
\"weekdays\": [0, 2, 5] } } }, \"log_path\": \"/\"}"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "enabled": true,
    "events": {
      "data": true,
      "management": true
    },
    "log": {
      "format": "json",
      "rotation": {
        "schedule": {
          "minutes": [
            10,
            15,
            30,
            45,
            59
          ],
          "hours": [
            0,
            1,
            6,
            12,
            18,
            23
          ],
```

```
          "weekdays": [
            0,
            2,
            5
          ],
          "days": [
            1,
            5,
            10,
            15
          ],
          "months": [
            0
          ]
        }
      },
      "retention": {
        "count": 0,
        "duration": "P4DT12H30M5S"
      }
    },
    "log_path": "/"
  }
],
"num_records": 1
}
```


Retrieving an S3 audit configuration for all SVMs in the cluster

```
# The API:
GET /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/audit/*/object-
store?fields=*&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
```

```
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "enabled": true,
    "events": {
      "data": false,
      "management": false
    },
    "log": {
      "format": "json",
      "rotation": {
        "size": 2048000
      },
      "retention": {
        "count": 10,
        "duration": "0s"
      }
    },
    "log_path": "/"
  },
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "enabled": true,
    "events": {
      "data": true,
      "management": true
    },
    "log": {
      "format": "json",
      "rotation": {
        "schedule": {
          "minutes": [
            10,
            15,
            30,
            45,
            59
          ],
          "hours": [
            0,
            1,
            6,
            12,
```

```
            18,
            23
          ],
          "weekdays": [
            0,
            2,
            5
          ],
          "days": [
            1,
            5,
            10,
            15
          ],
          "months": [
            0
          ]
        }
      },
      "retention": {
        "count": 0,
        "duration": "P4DT12H30M5S"
      }
    },
    "log_path": "/"
  }
],
"num_records": 2
}
```

Retrieving specific entries with event list as data and management event for an SVM

The configuration returned is identified by the events in the list of S3 audit configurations of an SVM.

```
# The API:
GET /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/audit/*/object-
store?events.data=true&events.management=true&return_records=true&return_t
imeout=15" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
      "name": "vs1"
    },
    "events": {
      "data": true,
      "management":true
    }
  },
  {
    "svm": {
      "uuid": "a8d64674-13fc-11e9-87b1-005056a7ae7e",
      "name": "vs3"
    },
    "events": {
      "data": true,
      "management": true
    }
  }
],
"num_records": 2
}
```

Retrieving a specific S3 audit configuration of an SVM

The configuration returned is identified by the UUID of its SVM.

```
# The API:
GET /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf/object-store/" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "ec650e97-156e-11e9-abcb-005056bbd0bf",
  "name": "vs1"
},
"enabled": true,
"events": {
  "data": false,
  "management": false
},
"log": {
  "format": "json",
  "rotation": {
    "size": 2048000
  },
  "retention": {
    "count": 10,
    "duration": "0s"
  }
},
"log_path": "/"
}
```

Updating a specific S3 audit configuration of an SVM

The configuration is identified by the UUID of its SVM and the provided information is updated.

```
# The API:
PATCH /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf/object-store/" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"enabled\": false}"
```

Deleting a specific S3 audit configuration of an SVM

The entry to be deleted is identified by the UUID of its SVM.

```
# The API:
DELETE /api/protocols/audit/{svm.uuid}/object-store/

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/audit/ec650e97-156e-11e9-
abcb-005056bbd0bf/object-store" -H "accept: application/json"
```

Delete an S3 audit configuration

DELETE `/protocols/audit/{svm.uuid}/object-store`

Introduced In: 9.10

Deletes an S3 audit configuration.

Related ONTAP commands

- `vserver object-store-server audit disable`
- `vserver object-store-server audit delete`

Learn more

- DOC /protocols/audit/{svm.uuid}/object-store

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	Indicates whether a force deletion of the audit configuration is enabled.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
140902420	Failed to delete audit configuration for the SVM.
140902421	Failed to delete audit configuration for the SVM because audit is enabled for the SVM.
140902422	Failed to delete audit configuration for the SVM because final consolidation is in progress. Wait a few minutes, and try the operation again.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an S3 audit configurations

GET `/protocols/audit/{svm.uuid}/object-store`

Introduced In: 9.10

Retrieves S3 audit configurations.

Related ONTAP commands

- `vserver object-store-server audit show`

Learn more

- DOC /protocols/audit/{svm.uuid}/object-store

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
log_path	string	query	False	Filter by log_path
log.format	string	query	False	Filter by log.format
log.retention.duration	string	query	False	Filter by log.retention.duration
log.retention.count	integer	query	False	Filter by log.retention.count
log.rotation.schedule.hours	integer	query	False	Filter by log.rotation.schedule.hours • Max value: 23 • Min value: 0
log.rotation.schedule.months	integer	query	False	Filter by log.rotation.schedule.months • Max value: 12 • Min value: 1

Name	Type	In	Required	Description
log.rotation.schedule.minutes	integer	query	False	Filter by log.rotation.schedule.minutes • Max value: 59 • Min value: 0
log.rotation.schedule.weekdays	integer	query	False	Filter by log.rotation.schedule.weekdays • Max value: 6 • Min value: 0
log.rotation.schedule.days	integer	query	False	Filter by log.rotation.schedule.days • Max value: 31 • Min value: 1
log.rotation.size	integer	query	False	Filter by log.rotation.size
events.data	boolean	query	False	Filter by events.data
events.management	boolean	query	False	Filter by events.management
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
log	s3_log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "log": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

events

Name	Type	Description
data	boolean	Data events
management	boolean	Management events

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with "duration".
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with "count".

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.

Name	Type	Description
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

s3_log

Name	Type	Description
_links	_links	

Name	Type	Description
format	string	Format in which the logs are generated by the consolidation process. Possible values are: • json - ONTAP-specific Json log format. ◦ Default value: 1 ◦ enum: ["json"] ◦ Introduced in: 9.10 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an S3 audit configuration for an SVM

PATCH `/protocols/audit/{svm.uuid}/object-store`

Introduced In: 9.10

Updates an S3 audit configuration for an SVM.

Important notes

- `events` - Not specifying either data or management is equivalent to setting it to false.

Related ONTAP commands

- `vserver object-store-server audit modify`

Learn more

- DOC /protocols/audit/{svm.uuid}/object-store

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
log	s3_log	

Name	Type	Description
log_path	string	The audit log destination path where consolidated audit logs are stored.

Example request

```
{
  "log": {
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
140902401	Failed to create an audit configuration for the SVM.
140902402	Audit configuration is already present.
140902402	Audit configuration is already enabled.
140902403	Failed to create staging volume.
140902415	Failed to modify an audit configuration because no audit configuration exists for SVM.
140902416	Failed to modify audit configuration for SVM.
140902422	Final consolidation is in progress, audit delete failed.
140902423	Failed to delete the audit configuration for the SVM.
140902425	Audit configuration is not available for disabling.
140902430	Audit configuration is not available for enabling.
140902431	Audit enable failed, audit configuration already enabled for the SVM.
140902432	Final consolidation is in progress, audit enable failed.
140902445	Audit disable failed, audit configuration does not exist for the SVM.
140902446	Audit configuration is already disabled.
140902446	Audit disable failed, audit configuration does not exist for the SVM.

Error Code	Description
140902456	The specified log_path does not exist.
140902457	The log_path must be a directory.
140902458	The log_path must be a canonical path in the SVM's namespace.
140902459	The log_path cannot be empty.
140902460	Rotate size must be greater than or equal to 1024 KB.
140902461	The destination path must not contain a symbolic link.
140902470	The log_path exceeds a maximum supported length of characters.
140902471	The log_path contains an unsupported read-only (DP/LS) volume.
140902472	The log_path is not a valid destination for the SVM.
140902474	The log_path contains an unsupported Snaplock volume.
140902478	The log_path validation failed.
140902478	The log_path cannot be accessed for validation.
140902479	No other fields can be specified when "enabled" is specified.
140902490	Audit configuration is absent for rotate.
140902491	Failed to rotate audit log.
140902492	Cannot rotate audit log, auditing is not enabled for this SVM.

Also see the table of common errors in the Response body overview section of this documentation.
ONTAP Error Response Codes

Error Code	Description
262186	Field "log.retention.duration" cannot be used with field "log.retention.count"
9699340	SVM UUID lookup failed
9699407	Additional fields are provided

Definitions

See Definitions

events

Name	Type	Description
data	boolean	Data events
management	boolean	Management events

href

Name	Type	Description
href	string	

_links

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with "duration".
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with "count".

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.

Name	Type	Description
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

s3_log

Name	Type	Description
format	string	Format in which the logs are generated by the consolidation process. Possible values are: • json - ONTAP-specific Json log format. ◦ Default value: 1 ◦ enum: ["json"] ◦ Introduced in: 9.10 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_audit

Auditing for NAS events is a security measure that enables you to track and log certain S3 events on SVMs.

Name	Type	Description
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.

Name	Type	Description
events	events	
log	s3_log	
log_path	string	The audit log destination path where consolidated audit logs are stored.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 audit configuration

POST `/protocols/audit/{svm.uuid}/object-store`

Introduced In: 9.10

Creates an S3 audit configuration.

Required properties

- `log_path` - Path in the owning SVM namespace that is used to store audit logs.

Default property values

If not specified in POST, the following default property values are assigned:

- `enabled` - *true*
- `events.data` - *true*
- `events.management` - *false*
- `log.format` - *json*
- `log.retention.count` - *0*
- `log.retention.duration` - *PT0S*
- `log.rotation.size` - *100MB*
- `log.rotation.now` - *false*

Related ONTAP commands

- `vserver object-store-server audit create`
- `vserver object-store-server audit enable`

Learn more

- DOC /protocols/audit/{svm.uuid}/object-store

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.
events	events	
log	s3_log	

Name	Type	Description
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "log": {
    "format": "string",
    "retention": {
      "duration": "P4DT12H30M5S"
    },
    "rotation": {
      "schedule": {
        "days": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
          "integer"
        ],
        "months": [
          "integer"
        ],
        "weekdays": [
          "integer"
        ]
      }
    }
  },
  "log_path": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_audit]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "log": {
        "format": "string",
        "retention": {
          "duration": "P4DT12H30M5S"
        },
        "rotation": {
          "schedule": {
            "days": [
              "integer"
            ],
            "hours": [
              "integer"
            ],
            "minutes": [
              "integer"
            ],
            "months": [
              "integer"
            ],
            "weekdays": [
              "integer"
            ]
          }
        }
      },
      "log_path": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
140902401	Failed to create an audit configuration for the SVM.
140902402	Audit configuration is already present.
140902402	Audit configuration is already enabled.
140902403	Failed to create staging volume.
140902415	Failed to modify an audit configuration because no audit configuration exists for the SVM.
140902416	Failed to modify audit configuration for SVM.
140902422	Final consolidation is in progress, audit delete failed.
140902423	Failed to delete the audit configuration for the SVM.
140902425	Audit configuration is not available for disabling.
140902430	Audit configuration is not available for enabling.
140902431	Audit enable failed, audit configuration already enabled for the SVM.
140902432	Final consolidation is in progress, audit enable failed.
140902445	Audit disable failed, audit configuration does not exist for the SVM.
140902446	Audit disable failed, audit configuration does not exist for the SVM.
140902447	Audit disable failed.
140902456	The specified log_path does not exist.
140902457	The log_path must be a directory.
140902458	The log_path must be a canonical path in the SVM's namespace.

Error Code	Description
140902459	The log_path cannot be empty.
140902460	Rotate size must be greater than or equal to 1024 KB.
140902461	The destination path must not contain a symbolic link.
140902470	The log_path exceeds a maximum supported length of characters.
140902471	The log_path contains an unsupported read-only (DP/LS) volume.
140902472	The log_path is not a valid destination for the SVM.
140902474	The log_path contains an unsupported Snaplock volume.
140902478	The log_path validation failed.
140902478	The log_path cannot be accessed for validation.
140902490	Audit configuration is absent for rotate.
140902491	Failed to rotate audit log.
140902492	Cannot rotate audit log, auditing is not enabled for this SVM.

Also see the table of common errors in the Response body overview section of this documentation.
ONTAP Error Response Codes

Error Code	Description
262186	Field "log.retention.duration" cannot be used with field "log.retention.count"
9699340	SVM UUID lookup failed
9699407	Additional fields are provided

Definitions

See Definitions

events

Name	Type	Description
data	boolean	Data events
management	boolean	Management events

href

Name	Type	Description
href	string	

_links

retention

Name	Type	Description
count	integer	Determines how many audit log files to retain before rotating the oldest log file out. This is mutually exclusive with "duration".
duration	string	Specifies an ISO-8601 format date and time to retain the audit log file. The audit log files are deleted once they reach the specified date/time. This is mutually exclusive with "count".

audit_schedule

Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.

Name	Type	Description
days	array[integer]	Specifies the day of the month schedule to rotate audit log. Leave empty for all.
hours	array[integer]	Specifies the hourly schedule to rotate audit log. Leave empty for all.

Name	Type	Description
minutes	array[integer]	Specifies the minutes schedule to rotate the audit log.
months	array[integer]	Specifies the months schedule to rotate audit log. Leave empty for all.
weekdays	array[integer]	Specifies the weekdays schedule to rotate audit log. Leave empty for all.

rotation

Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

Name	Type	Description
now	boolean	Manually rotates the audit logs. Optional in PATCH only. Not available in POST.
schedule	audit_schedule	Rotates the audit logs based on a schedule by using the time-based rotation parameters in any combination. The rotation schedule is calculated by using all the time-related values.
size	integer	Rotates logs based on log size in bytes.

s3_log

Name	Type	Description
format	string	Format in which the logs are generated by the consolidation process. Possible values are: • json - ONTAP-specific Json log format. ◦ Default value: 1 ◦ enum: ["json"] ◦ Introduced in: 9.10 ◦ x-nullable: true
retention	retention	
rotation	rotation	Audit event log files are rotated when they reach a configured threshold log size or are on a configured schedule. When an event log file is rotated, the scheduled consolidation task first renames the active converted file to a time-stamped archive file, and then creates a new active converted event log file.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_audit

Auditing for NAS events is a security measure that enables you to track and log certain S3 events on SVMs.

Name	Type	Description
enabled	boolean	Specifies whether or not auditing is enabled on the SVM.

Name	Type	Description
events	events	
log	s3_log	
log_path	string	The audit log destination path where consolidated audit logs are stored.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View CIFS connection information

Protocols CIFS connections endpoint overview

Overview

ONTAP CIFS connections show functionality is used to display currently established CIFS connections.

Information on the CIFS connection

- Retrieve the list of the established CIFS connections

Example

Retrieving established connection information

To retrieve the list of CIFS connections, use the following API.

```
# The API:
GET /protocols/cifs/connections

# The call:
curl -X GET "https://<cluster-mgmt-
ip>/api/protocols/cifs/connections?return_timeout=15&return_records=true"
-H "accept: application/json"

# The response:
{
  "records": [
    {
      "node": {
        "uuid": "85d46998-4e5d-11ea-afb1-0050568ec4e4",
        "name": "example_node_name"
      },
      "svm": {
        "uuid": "fc824aa8-4e60-11ea-afb1-0050568ec4e4",
        "name": "vs1"
      },
      "sessions": [
            {
              identifier: 625718873227788312
            }
                  ],
      "identifier": 91842,
      "server_ip": "10.140.70.197",
      "client_ip": "10.74.7.182",
      "client_port": 12345,
      "network_context_id": 3
    },
    {
      "node": {
        "uuid": "85d46998-4e5d-11ea-afb1-0050568ec4e4",
        "name": "example_node_name"
      },
      "svm": {
        "uuid": "fc824aa8-4e60-11ea-afb1-0050568ec4e4",
         "name": "vs1"
      },
      "sessions": [
```

```
            {
              identifier: 625718873227788579
            },
            {
              identifier: 625718873227788577
            }
                    ],
        "identifier": 92080,
        "server_ip": "10.140.70.197",
        "client_ip": "10.140.133.97",
        "client_port": 23413,
        "network_context_id": 5
      }
    ],
    "num_records": 2
  }
```


Retrieve the CIFS connection information for all SVMs

GET `/protocols/cifs/connections`

Introduced In: 9.11

Retrieves the CIFS connection information for all SVMs.

Related ONTAP commands

- `vserver cifs connection show`

Learn more

- DOC /protocols/cifs/connections

Parameters

Name	Type	In	Required	Description
sessions.identifier	integer	query	False	Filter by sessions.identifier
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
identifier	integer	query	False	Filter by identifier

Name	Type	In	Required	Description
client_ip	string	query	False	Filter by client_ip
client_port	integer	query	False	Filter by client_port
network_context_id	integer	query	False	Filter by network_context_id
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
server_ip	string	query	False	Filter by server_ip
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_connection]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "client_ip": "10.74.7.182",
      "client_port": 12345,
      "identifier": 22802,
      "network_context_id": 22802,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "server_ip": "10.140.78.248",
      "sessions": [
        {
          "identifier": 4622663542519103507
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

sessions

Name	Type	Description
identifier	integer	A unique 64-bit unsigned number represented as string used to represent each SMB session's identifier.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_connection

Name	Type	Description
client_ip	string	Specifies IP of the client.
client_port	integer	"A unique 32-bit unsigned number used to represent the port number of the connection".
identifier	integer	A unique 32-bit unsigned number used to represent each SMB session's connection ID.
network_context_id	integer	A unique 32-bit unsigned number used to represent each SMB session's network context ID.
node	node	
server_ip	string	Specifies the IP address of the SVM.
sessions	array[sessions]	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View CIFS domain-related information

Protocols CIFS domains endpoint overview

Overview

Displays CIFS domain-related information of all SVMs.

Examples

Retrieving all the fields of CIFS domain configurations of all SVMs

```
# The API:
GET /api/protocols/cifs/domains

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/domains/?fields=*" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "09cc9c9a-c7df-11eb-af15-0050568e403e",
      "name": "vs1"
    },
    "name_mapping": {
      "trusted_domains": [
        "SERVER02.COM",
        "SERVER03.COM"
      ]
    },
    "trust_relationships": [
      {
        "node": {
          "name": "vsNode1",
          "uuid": "a64c0906-c7dd-11eb-af15-0050568e403e"
```

```
        },
        "home_domain": "SERVER02.COM",
        "trusted_domains": [
          "SERVER02.COM"
        ]
      },
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "home_domain": "SERVER02.COM",
        "trusted_domains": [
          "SERVER02.COM"
        ]
      }
    ],
    "discovered_servers": [
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "domain": "server02.com",
        "server_type": "kerberos",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      },
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "domain": "server02.com",
        "server_type": "ms_ldap",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      },
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
```

```
        },
        "domain": "server02.com",
        "server_type": "ms_dc",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      }
    ],
    "preferred_dcs": [
      {
        "fqdn": "server02.com",
        "server_ip": "192.168.20.1"
      }
    ],
    "password_schedule": {
      "schedule_enabled": false,
      "schedule_weekly_interval": 6,
      "schedule_randomized_minute": 120,
      "schedule_description": "Sun@1:00"
    }
  },
  {
    "svm": {
      "uuid": "6dd78167-c907-11eb-b2bf-0050568e7324",
      "name": "vs2"
    },
    "name_mapping": {
      "trusted_domains": [
        "SERVER03.COM",
        "SERVER04.COM"
      ]
    },
    "trust_relationships": [
      {
        "node": {
          "name": "vsNode1",
          "uuid": "a64c0906-c7dd-11eb-af15-0050568e403e"
        },
        "home_domain": "SERVER02.COM",
        "trusted_domains": [
          "SERVER02.COM"
        ]
      },
      {
        "node": {
```

```
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "home_domain": "SERVER02.COM",
        "trusted_domains": [
          "SERVER02.COM"
        ]
      }
    ],
    "discovered_servers": [
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "domain": "server02.com",
        "server_type": "kerberos",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      },
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "domain": "server02.com",
        "server_type": "ms_ldap",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      },
      {
        "node": {
          "name": "vsNode2",
          "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
        },
        "domain": "server02.com",
        "server_type": "ms_dc",
        "server_name": "scspb0659002001",
        "server_ip": "192.168.20.1",
        "preference": "preferred",
        "state": "undetermined"
      }
```

```
      ],
      "preferred_dcs": [
        {
          "fqdn": "server02.com",
          "server_ip": "192.168.20.1"
        }
      ],
      "password_schedule": {
        "schedule_enabled": false,
        "schedule_weekly_interval": 4,
        "schedule_randomized_minute": 120,
        "schedule_description": "Tue@1:00"
      }
    }
  ],
  "num_records": 2
  }
```

Retrieve the CIFS domain-related information of all SVMs

GET `/protocols/cifs/domains`

Introduced In: 9.10

Retrieves the CIFS domain-related information of all SVMs.

Related ONTAP commands

- `vserver cifs domain preferred-dc show`
- `vserver cifs domain trusts show`
- `vserver cifs domain discovered-servers show`
- `vserver cifs domain name-mapping-search show`
- `vserver cifs domain schedule show`

Learn more

- DOC /protocols/cifs/domains

Parameters

Name	Type	In	Required	Description
client_id	string	query	False	Filter by client_id • Introduced in: 9.16
server_discovery_mode	string	query	False	Filter by server_discovery_mode • Introduced in: 9.13
password_schedule.schedule_enabled	boolean	query	False	Filter by password_schedule.schedule_enabled
password_schedule.schedule_weekly_interval	integer	query	False	Filter by password_schedule.schedule_weekly_interval • Max value: 52 • Min value: 1
password_schedule.schedule_warn_message	string	query	False	Filter by password_schedule.schedule_warn_message
password_schedule.schedule_last_changed_time	string	query	False	Filter by password_schedule.schedule_last_changed_time
password_schedule.schedule_randomized_minute	integer	query	False	Filter by password_schedule.schedule_randomized_minute • Max value: 180 • Min value: 1
password_schedule.schedule_description	string	query	False	Filter by password_schedule.schedule_description

Name	Type	In	Required	Description
tenant_id	string	query	False	Filter by tenant_id • Introduced in: 9.16
preferred_dcs.server_ip	string	query	False	Filter by preferred_dcs.server_ip
preferred_dcs.fqdn	string	query	False	Filter by preferred_dcs.fqdn
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
name_mapping.trusted_domains	string	query	False	Filter by name_mapping.trusted_domains
discovered_servers.server_name	string	query	False	Filter by discovered_servers.server_name
discovered_servers.server_type	string	query	False	Filter by discovered_servers.server_type
discovered_servers.state	string	query	False	Filter by discovered_servers.state
discovered_servers.server_ip	string	query	False	Filter by discovered_servers.server_ip
discovered_servers.node.uuid	string	query	False	Filter by discovered_servers.node.uuid
discovered_servers.node.name	string	query	False	Filter by discovered_servers.node.name
discovered_servers.domain	string	query	False	Filter by discovered_servers.domain

Name	Type	In	Required	Description
discovered_servers.preference	string	query	False	Filter by discovered_servers.preference
trust_relationships.node.uuid	string	query	False	Filter by trust_relationships.node.uuid
trust_relationships.node.name	string	query	False	Filter by trust_relationships.node.name
trust_relationships.home_domain	string	query	False	Filter by trust_relationships.home_domain
trust_relationships.trusted_domains	string	query	False	Filter by trust_relationships.trusted_domains
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of CIFS domain records.
records	array[cifs_domain]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
      "discovered_servers": [
        {
          "domain": "test.com",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "preference": "string",
          "server_ip": "string",
          "server_name": "string",
          "server_type": "string",
          "state": "string"
        }
      ],
      "name_mapping": {
        "trusted_domains": [
          "domain.com"
        ]
      },
      "password_schedule": {
        "schedule_day_of_week": "Sunday",
        "schedule_description": "string",
        "schedule_last_changed_time": "string",
        "schedule_time_of_day": 36900,
        "schedule_warn_message": "string"
      },
```

```
      "preferred_dcs": [
        {
          "fqdn": "test.com",
          "server_ip": "4.4.4.4"
        }
      ],
      "server_discovery_mode": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
      "trust_relationships": [
        {
          "home_domain": "string",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "trusted_domains": [
            "string"
          ]
        }
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

ad_domain

Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

discovered_servers

Name	Type	Description
domain	string	Fully Qualified Domain Name.
node	node	
preference	string	Server Preference
server_ip	string	Server IP address
server_name	string	Server Name
server_type	string	Server Type

Name	Type	Description
state	string	Server status

name_mapping

Specifies the name mapping search records.

Name	Type	Description
trusted_domains	array[string]	

password_schedule

Specifies the password schedule records.

Name	Type	Description
schedule_day_of_week	string	Day of the week for password change schedule.
schedule_description	string	Schedule description.
schedule_enabled	boolean	Is password schedule enabled.
schedule_last_changed_time	string	Last successful password change time.
schedule_randomized_minute	integer	Minutes within which schedule start can be randomized.
schedule_time_of_day	string	Start time for password change schedule.
schedule_warn_message	string	Warning message in case job is deleted.
schedule_weekly_interval	integer	Interval in weeks for password change schedule.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.

Name	Type	Description
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

trust_relationships

Name	Type	Description
home_domain	string	Home Domain Name
node	node	
trusted_domains	array[string]	Trusted Domain Name

cifs_domain

Name	Type	Description
ad_domain	ad_domain	Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.

Name	Type	Description
name_mapping	name_mapping	Specifies the name mapping search records.
password_schedule	password_schedule	Specifies the password schedule records.
preferred_dcs	array[preferred_dcs]	Specifies the preferred DC records.
server_discovery_mode	string	Specifies the mode of server discovery.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
trust_relationships	array[trust_relationships]	Specifies the trusted domain records.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage CIFS domain-related information

Protocols CIFS domains svm.uuid endpoint overview

Overview

Displays CIFS domain-related information of the specified SVM.

Examples

Retrieving all the fields of CIFS domain configurations of a specific SVM

```
# The API:
GET /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/domains/6dd78167-c907-
11eb-b2bf-0050568e7324" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "6dd78167-c907-11eb-b2bf-0050568e7324",
  "name": "vs2"
},
"name_mapping": {
  "trusted_domains": [
    "SERVER03.COM",
    "SERVER04.COM"
  ]
},
"server_discovery_mode": "all",
"trust_relationships": [
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "home_domain": "SERVER02.COM",
    "trusted_domains": [
      "SERVER02.COM"
    ]
  }
],
"discovered_servers": [
  {
```

```
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "kerberos",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  },
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "ms_ldap",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  },
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "ms_dc",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  }
],
"preferred_dcs": [
  {
    "fqdn": "server02.com",
    "server_ip": "192.168.20.1"
  }
],
"password_schedule": {
  "schedule_enabled": false,
  "schedule_weekly_interval": 4,
  "schedule_randomized_minute": 120,
```

```
  "schedule_description": "Tue@1:00"
}
}
```

Applying rediscover_trusts query parameter and retrieving all the fields of CIFS domain configurations

```
# The API:
GET /api/protocols/cifs/domains/{svm.uuid}?rediscover_trusts=true

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/domains/6dd78167-c907-
11eb-b2bf-0050568e7324?rediscover_trusts=true" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "6dd78167-c907-11eb-b2bf-0050568e7324",
  "name": "vs2"
},
"name_mapping": {
  "trusted_domains": [
    "SERVER03.COM",
    "SERVER04.COM"
  ]
},
"server_discovery_mode": "all",
"trust_relationships": [
  {
    "node": {
      "name": "vsNode1",
      "uuid": "a64c0906-c7dd-11eb-af15-0050568e403e"
    },
    "home_domain": "SERVER02.COM",
    "trusted_domains": [
      "SERVER02.COM"
    ]
  },
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
```

```
    },
    "home_domain": "SERVER02.COM",
    "trusted_domains": [
      "SERVER02.COM"
    ]
  }
],
"discovered_servers": [
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "kerberos",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  },
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "ms_ldap",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  },
  {
    "node": {
      "name": "vsNode2",
      "uuid": "4d9400f0-c84b-11eb-90ab-0050568e7324"
    },
    "domain": "server02.com",
    "server_type": "ms_dc",
    "server_name": "scspb0659002001",
    "server_ip": "192.168.20.1",
    "preference": "preferred",
    "state": "undetermined"
  }
],
"preferred_dcs": [
```

```
  {
    "fqdn": "server02.com",
    "server_ip": "192.168.20.1"
  }
],
"password_schedule": {
  "schedule_enabled": false,
  "schedule_weekly_interval": 4,
  "schedule_randomized_minute": 120,
  "schedule_description": "Tue@1:00"
}
}
```

Modifying the Password Schedule of CIFS domain configurations of a specific SVM

```
# The API:
PATCH /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/domains/a83f816a-c873-
11ed-a3b2-0050568e278e" -H "accept: application/json" -d "{
\"password_schedule\": { \"schedule_enabled\": \"true\" }}"
```

Modifying the discovery-mode of CIFS domain configurations of a specific SVM

```
# The API:
PATCH /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/domains/a83f816a-c873-
11ed-a3b2-0050568e278e" -H "accept: application/json" -d "{
\"server_discovery_mode\": \"site\" }"
```

Reset the CIFS domain password for a specific SVM

```
# The API:
PATCH /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/domains/a12f816a-c873-
11ed-a3b2-0050568e278e?cifs_password_operation=reset" -H "accept:
application/json" -d "{ \"ad_domain\":{ \"user\": \"administrator\" ,
\"password\": \"admin_password\" }}"
```

Reset the CIFS domain password for a specific SVM with hybrid auth user type

```
# The API:
PATCH /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/domains/a12f816a-c873-
11ed-a3b2-0050568e278e?cifs_password_operation=reset" -H "accept:
application/json" -d "{ \"tenant_id\": \"ffffffff-ffff-ffff-ffff-
ffffffffffff\" , \"client_id\": \"ffffffff-zzzz-zzzz-zzzz-ffffffffffff\" ,
\"client_certificate\": \"certificate added to the azure application\" }"
```

Change the CIFS domain password for a specific SVM

```
# The API:
PATCH /api/protocols/cifs/domains/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/domains/a12f816a-c873-
11ed-a3b2-0050568e278e?cifs_password_operation=reset" -H "accept:
application/json" -d "{ }"
```

Retrieve the CIFS domain-related information for an SVM

GET `/protocols/cifs/domains/{svm.uuid}`

Introduced In: 9.10

Retrieves the CIFS domain-related information of the specified SVM.

Important notes

GET operation with query parameter `rediscover_trusts` and `reset_discovered_servers` returns available CIFS domain configurations and also triggers trusts rediscovery and discovered servers reset asynchronously for that SVM.

Related ONTAP commands

- `vserver cifs domain preferred-dc show`
- `vserver cifs domain trusts show`
- `vserver cifs domain discovered-servers show`
- `vserver cifs domain name-mapping-search show`
- `vserver cifs domain password schedule show`
- `vserver cifs domain discovered-servers discovery-mode show`

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}

Parameters

Name	Type	In	Required	Description
rediscover_trusts	boolean	query	False	Force the discovery of trusted domains. • Default value:
reset_discovered_servers	boolean	query	False	Force a rediscovery. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
ad_domain	ad_domain	Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
name_mapping	name_mapping	Specifies the name mapping search records.
password_schedule	password_schedule	Specifies the password schedule records.
preferred_dcs	array[preferred_dcs]	Specifies the preferred DC records.
server_discovery_mode	string	Specifies the mode of server discovery.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
trust_relationships	array[trust_relationships]	Specifies the trusted domain records.

Example response


```
{
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "discovered_servers": [
    {
      "domain": "test.com",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "string",
      "server_ip": "string",
      "server_name": "string",
      "server_type": "string",
      "state": "string"
    }
  ],
  "name_mapping": {
    "trusted_domains": [
      "domain.com"
    ]
  },
  "password_schedule": {
    "schedule_day_of_week": "Sunday",
    "schedule_description": "string",
    "schedule_last_changed_time": "string",
    "schedule_time_of_day": 36900,
    "schedule_warn_message": "string"
  },
  "preferred_dcs": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ],
  "server_discovery_mode": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
```

```
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
    "trust_relationships": [
      {
        "home_domain": "string",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "trusted_domains": [
          "string"
        ]
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
656463	SVM UUID must be provided for a query on the field rediscover_trusts and reset_discovered_servers.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

ad_domain

Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

discovered_servers

Name	Type	Description
domain	string	Fully Qualified Domain Name.
node	node	
preference	string	Server Preference
server_ip	string	Server IP address
server_name	string	Server Name
server_type	string	Server Type
state	string	Server status

name_mapping

Specifies the name mapping search records.

Name	Type	Description
trusted_domains	array[string]	

password_schedule

Specifies the password schedule records.

Name	Type	Description
schedule_day_of_week	string	Day of the week for password change schedule.
schedule_description	string	Schedule description.
schedule_enabled	boolean	Is password schedule enabled.
schedule_last_changed_time	string	Last successful password change time.
schedule_randomized_minute	integer	Minutes within which schedule start can be randomized.
schedule_time_of_day	string	Start time for password change schedule.
schedule_warn_message	string	Warning message in case job is deleted.
schedule_weekly_interval	integer	Interval in weeks for password change schedule.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

trust_relationships

Name	Type	Description
home_domain	string	Home Domain Name
node	node	
trusted_domains	array[string]	Trusted Domain Name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Modify the CIFS domain-related information for an SVM

PATCH `/protocols/cifs/domains/{svm.uuid}`

Introduced In: 9.13

Modifies the CIFS domain-related information of the specified SVM.

Related ONTAP commands

- `vserver cifs domain password schedule modify`
- `vserver cifs domain discovered-servers discovery-mode modify`
- `vserver cifs domain password reset`
- `vserver cifs domain password change`

Important notes

- If the query is set to cifs_password_operation=reset and ad_domain_user and ad_domain_password is included in the body,a CIFS password reset is executed.
- If the query is set to cifs_password_operation=reset and tenant_id, client_id and client_certificate is included in the body,a CIFS password reset is executed in Azure EntraId for hybrid user.
- If the body is empty when the query is set to cifs_password_operation=reset, a CIFS password change is executed.

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}

Parameters

Name	Type	In	Required	Description
cifs_password_operation	string	query	False	Specifies the operation to be performed on the domain password. • enum: ["reset"] • Introduced in: 9.14
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14

Request Body

Name	Type	Description
ad_domain	ad_domain	Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
name_mapping	name_mapping	Specifies the name mapping search records.
password_schedule	password_schedule	Specifies the password schedule records.
preferred_dcs	array[preferred_dcs]	Specifies the preferred DC records.
server_discovery_mode	string	Specifies the mode of server discovery.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
trust_relationships	array[trust_relationships]	Specifies the trusted domain records.

Example request

```
{
  "ad_domain": {
    "password": "string",
    "user": "string"
  },
  "client_certificate": "PEM Cert",
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "discovered_servers": [
    {
      "domain": "test.com",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "preference": "string",
      "server_ip": "string",
      "server_name": "string",
      "server_type": "string",
      "state": "string"
    }
  ],
  "name_mapping": {
    "trusted_domains": [
      "domain.com"
    ]
  },
  "password_schedule": {
    "schedule_day_of_week": "Sunday",
    "schedule_description": "string",
    "schedule_last_changed_time": "string",
    "schedule_time_of_day": 36900,
    "schedule_warn_message": "string"
  },
  "preferred_dcs": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4"
    }
  ],
  "server_discovery_mode": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
```

```
  "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
  "trust_relationships": [
    {
      "home_domain": "string",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "trusted_domains": [
        "string"
      ]
    }
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262278	Domain user and password are required fields.
655513	Password update failed due to invalid credentials.
656392	Preferred DC's need to be configured if CIFS discovery mode is set to none.
656393	Default site needs to be configured if CIFS discovery mode is set to site.
656487	Missing fields when doing CIFS operation with hybrid auth user type.

Definitions

See Definitions

ad_domain

Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.

Name	Type	Description
password	string	The account password of the user with permissions to reset the password in the organizational unit for the machine account.
user	string	The username of a user with permissions to reset the password in the organizational unit for the machine account.

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

discovered_servers

Name	Type	Description
domain	string	Fully Qualified Domain Name.
node	node	
preference	string	Server Preference
server_ip	string	Server IP address
server_name	string	Server Name
server_type	string	Server Type

Name	Type	Description
state	string	Server status

name_mapping

Specifies the name mapping search records.

Name	Type	Description
trusted_domains	array[string]	

password_schedule

Specifies the password schedule records.

Name	Type	Description
schedule_day_of_week	string	Day of the week for password change schedule.
schedule_description	string	Schedule description.
schedule_enabled	boolean	Is password schedule enabled.
schedule_last_changed_time	string	Last successful password change time.
schedule_randomized_minute	integer	Minutes within which schedule start can be randomized.
schedule_time_of_day	string	Start time for password change schedule.
schedule_warn_message	string	Warning message in case job is deleted.
schedule_weekly_interval	integer	Interval in weeks for password change schedule.

preferred_dcs

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.

Name	Type	Description
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

trust_relationships

Name	Type	Description
home_domain	string	Home Domain Name
node	node	
trusted_domains	array[string]	Trusted Domain Name

cifs_domain

Name	Type	Description
ad_domain	ad_domain	Specifies the credentials of a user with permissions to reset the password in the organizational unit for the machine account.
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.

Name	Type	Description
discovered_servers	array[discovered_servers]	Specifies the discovered servers records.
name_mapping	name_mapping	Specifies the name mapping search records.
password_schedule	password_schedule	Specifies the password schedule records.
preferred_dcs	array[preferred_dcs]	Specifies the preferred DC records.
server_discovery_mode	string	Specifies the mode of server discovery.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
trust_relationships	array[trust_relationships]	Specifies the trusted domain records.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage CIFS DC configuration

Protocols CIFS domains svm.uuid preferred-domain-controllers endpoint overview

Overview

You can use this API to display a CIFS domain preferred DC configuration of an SVM.

Retrieving all CIFS domain preferred DC configurations of an SVM

The CIFS domain preferred DC GET endpoint retrieves all the configurations for a specific SVM.

Examples

Retrieving all the fields of all CIFS domain preferred DC configurations of an SVM

```
# The API:
GET /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-abc9-
11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fields=*" -H "accept:
application/json"

# The response:
{
 "records": [
{
  "svm": {
    "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
    "name": "svm1"
  },
  "fqdn": "host1",
  "server_ip": "4.4.4.4"
},
{
  "svm": {
    "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
    "name": "svm1"
  },
  "fqdn": "host2",
  "server_ip": "11.11.11.11"
}
],
 "num_records": 2
}
```

Retrieving the CIFS domain preferred DC configuration of a specific SVM, "fqdn" and "server_ip"

```
# The API:
GET /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-
controllers/{fqdn}/{server_ip}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-abc9-
11eb-8de3-0050568eb0c4/preferred-domain-controllers/host1/4.4.4.4" -H
"accept: application/json"

# The response:
{
"svm": {
  "uuid": "1226670c-abc9-11eb-8de3-0050568eb0c4",
  "name": "svm1"
},
"fqdn": "host1",
"server_ip": "4.4.4.4"
}
```

Creating a new CIFS domain preferred DC configuration

The CIFS domain preferred DC POST endpoint creates a new configuration. Both bulk and instance POST is supported.

Examples

Creating a single CIFS domain preferred DC configuration

```
# The API:
POST /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-abc9-
11eb-8de3-0050568eb0c4/preferred-domain-
controllers?skip_config_validation=true&return_records=false" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"fqdn\":
\"testing.com\", \"server_ip\": \"1.1.1.1\"}"
```

Deleting an existing CIFS domain preferred DC configuration

The CIFS domain preferred DC DELETE endpoint deletes an existing configuration. Both bulk and instance delete is supported.

Examples

Deleting the CIFS domain preferred DC configuration of a specific SVM, "fqdn" and "server_ip"

```
# The API:
DELETE /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-
controllers/{fqdn}/{server_ip}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/sample/4.4.4.4"
```

```
### Deleting the CIFS domain preferred DC configurations of a specific SVM
and "fqdn"
```

```
# The API:
DELETE /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fqdn=sampl"
```

Deleting all CIFS domain preferred DC configurations of a specific SVM

```
# The API:
DELETE /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-controllers/?fqdn=*"
```

Deleting the CIFS domain preferred DC configurations of a specific SVM, "fqdn" and set of "server_ips"

```
# The API:
DELETE /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-
controllers/?fqdn=sample&server_ip=3.3.3.3&#124;4.4.4.4&#124;1.1.1.1&#124;
2.2.2.2"
```

Deleting the CIFS domain preferred DC configurations of a specific SVM and set of "server_ips"

```
# The API:
DELETE /api/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/domains/1226670c-
abc9-11eb-8de3-0050568eb0c4/preferred-domain-
controllers/?server_ip=3.3.3.3&#124;4.4.4.4&#124;1.1.1.1&#124;2.2.2.2"
```

Retrieve the CIFS domain preferred DC configuration for an SVM

GET `/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers`

Introduced In: 9.10

Retrieves the CIFS domain preferred DC configuration of an SVM.

Related ONTAP commands

- `vserver cifs domain preferred-dc show`
- `vserver cifs domain preferred-dc check`

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

Parameters

Name	Type	In	Required	Description
need_status	boolean	query	False	Retrieves the status of the preferred DCs. • Default value: • Introduced in: 9.12
status.details	string	query	False	Filter by status.details • Introduced in: 9.12
status.reachable	boolean	query	False	Filter by status.reachable • Introduced in: 9.12
server_ip	string	query	False	Filter by server_ip
fqdn	string	query	False	Filter by fqdn
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.16
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of CIFS preferred domain controller records.
records	array[cifs_domain_preferred_dc]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "fqdn": "test.com",
      "server_ip": "4.4.4.4",
      "status": {
        "details": "Response time (msec): 111",
        "reachable": 1
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

status

Status of CIFS preferred domain controller.

Name	Type	Description
details	string	Provides a detailed description of the state if the state is 'down' or the response time of the DNS server if the state is 'up'.
reachable	boolean	Indicates whether or not the domain controller is reachable.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_domain_preferred_dc

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.
status	status	Status of CIFS preferred domain controller.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the CIFS domain preferred DC configuration for an SVM

POST `/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers`

Introduced In: 9.10

Creates a CIFS preferred DC configuration for an SVM.

Important notes

- In the case of bulk POST requests, the create operation should be performed serially since there can be interdependence between records. In order to avoid issues, it is advisable to always use the query

parameter "serial_records=true".

Required properties

- `svm.uuid` - Existing SVM in which to create the preferred-dc.
- `domain` - Fully Qualified Domain Name.
- `server_ip` - IPv4/IPv6 address of the Preferred Domain Controller.

The following parameters are optional:

- skip_config_validation

Related ONTAP commands

- `vserver cifs domain preferred-dc add`

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

Parameters

Name	Type	In	Required	Description
skip_config_validation	boolean	query	False	Skip the validation of the specified preferred DC configuration. • Default value:
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.

Name	Type	Description
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.
status	status	Status of CIFS preferred domain controller.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4",
  "status": {
    "details": "Response time (msec): 111",
    "reachable": 1
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.
status	status	Status of CIFS preferred domain controller.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4",
  "status": {
    "details": "Response time (msec): 111",
    "reachable": 1
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621516	Only data SVMs allowed.
655918	The fully qualified domain name cannot be longer than 254 bytes.
656408	RPC failure occurred during the CIFS preferred-dc configuration validation.
656407	Failed to validate CIFS preferred-dc for domain. Reason: Configuration not found at SecD. Contact technical support for assistance.
655366	Invalid domain controller.

Error Code	Description
655506	Failed to add preferred-dc.

Definitions

See Definitions

status

Status of CIFS preferred domain controller.

Name	Type	Description
details	string	Provides a detailed description of the state if the state is 'down' or the response time of the DNS server if the state is 'up'.
reachable	boolean	Indicates whether or not the domain controller is reachable.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_domain_preferred_dc

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.

Name	Type	Description
status	status	Status of CIFS preferred domain controller.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the CIFS domain preferred DC configuration for an SVM and domain

DELETE `/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers/{fqdn}/{server_ip}`

Introduced In: 9.10

Deletes the CIFS domain preferred DC configuration of the specified SVM and domain.

Related ONTAP commands

- `vserver cifs domain preferred-dc delete`

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

Parameters

Name	Type	In	Required	Description
fqdn	string	path	True	Fully Qualified Domain Name
server_ip	string	path	True	Domain Controller IP address
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655507	Failed to remove preferred-dc.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the CIFS domain preferred DC configuration for an SVM and domain

GET `/protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers/{fqdn}/{server_ip}`

Introduced In: 9.10

Retrieves the CIFS domain preferred DC configuration of an SVM.

Related ONTAP commands

- `vserver cifs domain preferred-dc show`
- `vserver cifs domain preferred-dc check`

Learn more

- DOC /protocols/cifs/domains/{svm.uuid}/preferred-domain-controllers

Parameters

Name	Type	In	Required	Description
fqdn	string	path	True	Fully Qualified Domain Name
server_ip	string	path	True	Domain Controller IP address
need_status	boolean	query	False	Retrieves the status of the specified preferred DC. • Introduced in: 9.12 • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
fqdn	string	Fully Qualified Domain Name.

Name	Type	Description
server_ip	string	IP address of the preferred domain controller (DC). The address can be either an IPv4 or an IPv6 address.
status	status	Status of CIFS preferred domain controller.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "fqdn": "test.com",
  "server_ip": "4.4.4.4",
  "status": {
    "details": "Response time (msec): 111",
    "reachable": 1
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

status

Status of CIFS preferred domain controller.

Name	Type	Description
details	string	Provides a detailed description of the state if the state is 'down' or the response time of the DNS server if the state is 'up'.
reachable	boolean	Indicates whether or not the domain controller is reachable.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve unapplied group policy objects for all SVMs

GET `/protocols/cifs/group-policies`

Introduced In: 9.12

Retrieves group policy objects that are yet to be applied for all SVMs.

Related ONTAP commands

- `vserver cifs group-policy show-defined`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
link	string	query	False	Filter by link
enabled	boolean	query	False	Filter by enabled
version	integer	query	False	Filter by version
extensions	string	query	False	Filter by extensions
uuid	string	query	False	Filter by uuid
ldap_path	string	query	False	Filter by ldap_path

Name	Type	In	Required	Description
central_access_policy_staging_audit_type	string	query	False	Filter by central_access_policy_staging_audit_type
security_settings.event_log_settings.retention_method	string	query	False	Filter by security_settings.event_log_settings.retention_method
security_settings.event_log_settings.max_size	integer	query	False	Filter by security_settings.event_log_settings.max_size
security_settings.privilege_rights.security_privilege_users	string	query	False	Filter by security_settings.privilege_rights.security_privilege_users
security_settings.privilege_rights.change_notify_users	string	query	False	Filter by security_settings.privilege_rights.change_notify_users
security_settings.privilege_rights.take_ownership_users	string	query	False	Filter by security_settings.privilege_rights.take_ownership_users
security_settings.registry_values.signing_required	boolean	query	False	Filter by security_settings.registry_values.signing_required
security_settings.restrict_anonymous.no_enumeration_of_sam_accounts	boolean	query	False	Filter by security_settings.restrict_anonymous.no_enumeration_of_sam_accounts
security_settings.restrict_anonymous.no_enumeration_of_sam_accounts_and_shares	boolean	query	False	Filter by security_settings.restrict_anonymous.no_enumeration_of_sam_accounts_and_shares

Name	Type	In	Required	Description
security_settings.restrict_anonymous.anonymous_access_to_shares_and_named_pipes_restricted	boolean	query	False	Filter by security_settings.restrict_anonymous.anonymous_access_to_shares_and_named_pipes_restricted
security_settings.restrict_anonymous.combined_restriction_for_anonymous_user	string	query	False	Filter by security_settings.restrict_anonymous.combined_restriction_for_anonymous_user
security_settings.restricted_groups	string	query	False	Filter by security_settings.restricted_groups
security_settings.event_audit_settings.logon_type	string	query	False	Filter by security_settings.event_audit_settings.logon_type
security_settings.event_audit_settings.object_access_type	string	query	False	Filter by security_settings.event_audit_settings.object_access_type
security_settings.files_or_folders	string	query	False	Filter by security_settings.files_or_folders
security_settings.kerberos.max_renew_age	string	query	False	Filter by security_settings.kerberos.max_renew_age
security_settings.kerberos.max_clock_skew	string	query	False	Filter by security_settings.kerberos.max_clock_skew
security_settings.kerberos.max_ticket_age	string	query	False	Filter by security_settings.kerberos.max_ticket_age
file_system_path	string	query	False	Filter by file_system_path

Name	Type	In	Required	Description
central_access_policy_settings	string	query	False	Filter by central_access_policy_settings
registry_settings.refresh_time_interval	string	query	False	Filter by registry_settings.refresh_time_interval
registry_settings.refresh_time_random_offset	string	query	False	Filter by registry_settings.refresh_time_random_offset
registry_settings.branchcache.supported_hash_version	string	query	False	Filter by registry_settings.branchcache.supported_hash_version
registry_settings.branchcache.hash_publication_mode	string	query	False	Filter by registry_settings.branchcache.hash_publication_mode
name	string	query	False	Filter by name • minLength: 1
index	integer	query	False	Filter by index
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of central access rules.
records	array[policies_and_rules_to_be_applied]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "to_be_applied": {
        "access_policies": [
          {
            "create_time": "2018-01-01 11:00:00 -0500",
            "description": "policy #1",
            "member_rules": [
              "r1",
              "r2"
            ],
            "name": "p1",
            "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
            "svm": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "update_time": "2018-01-01 11:00:00 -0500"
          }
        ],
```

```
        "access_rules": [
          {
            "create_time": "2018-01-01 11:00:00 -0500",
            "current_permission": "O:SYG:SYD:AR(A;;FA;;;WD)",
            "description": "rule #1",
            "name": "p1",
            "proposed_permission":
"O:SYG:SYD:(A;;FA;;;OW)(A;;FA;;;BA)(A;;FA;;;SY)",
            "resource_criteria": "department",
            "svm": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "update_time": "2018-01-01 11:00:00 -0500"
          }
        ],
        "objects": [
          {
            "central_access_policy_settings": [
              "p1",
              "p2"
            ],
            "central_access_policy_staging_audit_type": "none",
            "extensions": [
              "audit",
              "security"
            ],
            "file_system_path": "\\test.com\\SysVol\\test.com\\
policies\\{42474212-3f9d-4489-ae01-6fcf4f805d4c}",
            "index": 1,
            "ldap_path": "cn={42474212-3f9d-4489-ae01-
6fcf4f805d4c},cn=policies,cn=system,DC=TEST,DC=COM",
            "link": "domain",
            "name": "test_policy",
            "registry_settings": {
              "branchcache": {
                "hash_publication_mode": "disabled",
                "supported_hash_version": "version1"
              },
              "refresh_time_interval": "P15M",
              "refresh_time_random_offset": "P1D"
```

```
            },
            "security_settings": {
              "event_audit_settings": {
                "logon_type": "failure",
                "object_access_type": "failure"
              },
              "event_log_settings": {
                "max_size": 2048,
                "retention_method": "do_not_overwrite"
              },
              "files_or_folders": [
                "/vol1/home",
                "/vol1/dir1"
              ],
              "kerberos": {
                "max_clock_skew": "P15M",
                "max_renew_age": "P2D",
                "max_ticket_age": "P24H"
              },
              "privilege_rights": {
                "change_notify_users": [
                  "usr1",
                  "usr2"
                ],
                "security_privilege_users": [
                  "usr1",
                  "usr2"
                ],
                "take_ownership_users": [
                  "usr1",
                  "usr2"
                ]
              },
              "restrict_anonymous": {
                "combined_restriction_for_anonymous_user": "no_access"
              },
              "restricted_groups": [
                "test_grp1",
                "test_grp2"
              ]
            },
            "svm": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
```

```
                },
                "name": "svm1",
                "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
              },
              "uuid": "42474212-3f9d-4489-ae01-6fcf4f805d4c",
              "version": 7
            }
          ],
          "restricted_groups": [
            {
              "group_name": "test_group",
              "link": "domain",
              "members": [
                "DOMAIN/test_user",
                "DOMAIN/user2"
              ],
              "memberships": [
                "DOMAIN/AdministratorGrp",
                "DOMAIN/deptMark"
              ],
              "policy_name": "test_policy",
              "svm": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "svm1",
                "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
              },
              "version": 7
            }
          ]
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object_central_access_policy

Name	Type	Description
create_time	string	Policy creation timestamp.
description	string	Description about the policy.
member_rules	array[string]	Names of all central access rules applied to members.
name	string	
sid	string	Security ID, unique identifier of the central policy.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

group_policy_object_central_access_rule

Name	Type	Description
create_time	string	Policy creation timestamp.
current_permission	string	Effective security policy in security descriptor definition language format.
description	string	Description about the policy.
name	string	
proposed_permission	string	Proposed security policy in security descriptor definition language format.
resource_criteria	string	Criteria to scope resources for which access rules apply.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

group_policy_object_branchcache

Name	Type	Description
hash_publication_mode	string	Hash publication mode.
supported_hash_version	string	Hash version.

group_policy_object_registry_setting

Name	Type	Description
branchcache	group_policy_object_branchcache	
refresh_time_interval	string	Refresh time interval in ISO-8601 format.
refresh_time_random_offset	string	Random offset in ISO-8601 format.

group_policy_object_event_audit

Name	Type	Description
logon_type	string	Type of logon event to be audited.
object_access_type	string	Type of object access to be audited.

group_policy_object_event_log

Name	Type	Description
max_size	integer	Maximum size of security log, in kilobytes.
retention_method	string	Audit log retention method.

group_policy_object_kerberos

Name	Type	Description
max_clock_skew	string	Kerberos clock skew in ISO-8601 format.
max_renew_age	string	Kerberos max renew age in ISO-8601 format.

Name	Type	Description
max_ticket_age	string	Kerberos max ticket age in ISO-8601 format.

group_policy_object_privilege_right

Name	Type	Description
change_notify_users	array[string]	Users with traversing bypass privileges.
security_privilege_users	array[string]	Users with security privileges.
take_ownership_users	array[string]	Users who can take ownership of securable objects.

group_policy_object_registry_value

Name	Type	Description
signing_required	boolean	SMB signing required.

group_policy_object_restrict_anonymous

Name	Type	Description
anonymous_access_to_shares_and_named_pipes_restricted	boolean	Restrict anonymous access to shares and named pipes.
combined_restriction_for_anonymous_user	string	Combined restriction for anonymous user.
no_enumeration_of_sam_accounts	boolean	No enumeration of SAM accounts.
no_enumeration_of_sam_accounts_and_shares	boolean	No enumeration of SAM accounts and shares.

group_policy_object_security_setting

Name	Type	Description
event_audit_settings	group_policy_object_event_audit	
event_log_settings	group_policy_object_event_log	
files_or_folders	array[string]	Files/Directories for file security.

Name	Type	Description
kerberos	group_policy_object_kerberos	
privilege_rights	group_policy_object_privilege_right	
registry_values	group_policy_object_registry_value	
restrict_anonymous	group_policy_object_restrict_anonymous	
restricted_groups	array[string]	List of restricted groups.

group_policy_object

Name	Type	Description
central_access_policy_settings	array[string]	List of central access policies.
central_access_policy_staging_audit_type	string	Types of events to be audited.
enabled	boolean	Specifies whether group policies are enabled for the SVM.
extensions	array[string]	List of extensions.
file_system_path	string	File system path.
index	integer	Group policy object index.
ldap_path	string	LDAP path to the GPO.
link	string	Link info.
name	string	
registry_settings	group_policy_object_registry_setting	
security_settings	group_policy_object_security_setting	
svm	svm	Will not be populated for objects that are yet to be applied.
uuid	string	Policy UUID.
version	integer	Group policy object version.

group_policy_object_restricted_group

Name	Type	Description
group_name	string	
link	string	Link info.
members	array[string]	Members of the group.
memberships	array[string]	Group is member of Group/OU.
policy_name	string	
svm	svm	Will not be populated for objects that are yet to be applied.
version	integer	Group policy object version.

to_be_applied

Name	Type	Description
access_policies	array[group_policy_object_central_access_policy]	
access_rules	array[group_policy_object_central_access_rule]	
objects	array[group_policy_object]	
restricted_groups	array[group_policy_object_restricted_group]	

policies_and_rules_to_be_applied

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
to_be_applied	to_be_applied	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve unapplied group policy objects for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}`

Introduced In: 9.12

Retrieves group policy objects that are yet to be applied for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy show-defined`

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
to_be_applied	to_be_applied	

Example response


```
{
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "to_be_applied": {
    "access_policies": [
      {
        "create_time": "2018-01-01 11:00:00 -0500",
        "description": "policy #1",
        "member_rules": [
          "r1",
          "r2"
        ],
        "name": "p1",
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "update_time": "2018-01-01 11:00:00 -0500"
      }
    ],
    "access_rules": [
      {
        "create_time": "2018-01-01 11:00:00 -0500",
        "current_permission": "O:SYG:SYD:AR(A;;FA;;;WD)",
        "description": "rule #1",
        "name": "p1",
        "proposed_permission":
"O:SYG:SYD:(A;;FA;;;OW)(A;;FA;;;BA)(A;;FA;;;SY)",
        "resource_criteria": "department",
        "svm": {
          "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "update_time": "2018-01-01 11:00:00 -0500"
      }
    ],
    "objects": [
      {
        "central_access_policy_settings": [
          "p1",
          "p2"
        ],
        "central_access_policy_staging_audit_type": "none",
        "extensions": [
          "audit",
          "security"
        ],
        "file_system_path": "\\test.com\\SysVol\\test.com\\policies
\\{42474212-3f9d-4489-ae01-6fcf4f805d4c}",
        "index": 1,
        "ldap_path": "cn={42474212-3f9d-4489-ae01-
6fcf4f805d4c},cn=policies,cn=system,DC=TEST,DC=COM",
        "link": "domain",
        "name": "test_policy",
        "registry_settings": {
          "branchcache": {
            "hash_publication_mode": "disabled",
            "supported_hash_version": "version1"
          },
          "refresh_time_interval": "P15M",
          "refresh_time_random_offset": "P1D"
        },
        "security_settings": {
          "event_audit_settings": {
            "logon_type": "failure",
            "object_access_type": "failure"
          },
          "event_log_settings": {
            "max_size": 2048,
            "retention_method": "do_not_overwrite"
          },
          "files_or_folders": [
```

```
            "/vol1/home",
            "/vol1/dir1"
          ],
          "kerberos": {
            "max_clock_skew": "P15M",
            "max_renew_age": "P2D",
            "max_ticket_age": "P24H"
          },
          "privilege_rights": {
            "change_notify_users": [
              "usr1",
              "usr2"
            ],
            "security_privilege_users": [
              "usr1",
              "usr2"
            ],
            "take_ownership_users": [
              "usr1",
              "usr2"
            ]
          },
          "restrict_anonymous": {
            "combined_restriction_for_anonymous_user": "no_access"
          },
          "restricted_groups": [
            "test_grp1",
            "test_grp2"
          ]
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "42474212-3f9d-4489-ae01-6fcf4f805d4c",
        "version": 7
      }
    ],
    "restricted_groups": [
      {
        "group_name": "test_group",
```

```
        "link": "domain",
        "members": [
          "DOMAIN/test_user",
          "DOMAIN/user2"
        ],
        "memberships": [
          "DOMAIN/AdministratorGrp",
          "DOMAIN/deptMark"
        ],
        "policy_name": "test_policy",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "version": 7
      }
    ]
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object_central_access_policy

Name	Type	Description
create_time	string	Policy creation timestamp.

Name	Type	Description
description	string	Description about the policy.
member_rules	array[string]	Names of all central access rules applied to members.
name	string	
sid	string	Security ID, unique identifier of the central policy.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

group_policy_object_central_access_rule

Name	Type	Description
create_time	string	Policy creation timestamp.
current_permission	string	Effective security policy in security descriptor definition language format.
description	string	Description about the policy.
name	string	
proposed_permission	string	Proposed security policy in security descriptor definition language format.
resource_criteria	string	Criteria to scope resources for which access rules apply.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

group_policy_object_branchcache

Name	Type	Description
hash_publication_mode	string	Hash publication mode.
supported_hash_version	string	Hash version.

group_policy_object_registry_setting

Name	Type	Description
branchcache	group_policy_object_branchcache	
refresh_time_interval	string	Refresh time interval in ISO-8601 format.
refresh_time_random_offset	string	Random offset in ISO-8601 format.

group_policy_object_event_audit

Name	Type	Description
logon_type	string	Type of logon event to be audited.
object_access_type	string	Type of object access to be audited.

group_policy_object_event_log

Name	Type	Description
max_size	integer	Maximum size of security log, in kilobytes.
retention_method	string	Audit log retention method.

group_policy_object_kerberos

Name	Type	Description
max_clock_skew	string	Kerberos clock skew in ISO-8601 format.
max_renew_age	string	Kerberos max renew age in ISO-8601 format.

Name	Type	Description
max_ticket_age	string	Kerberos max ticket age in ISO-8601 format.

group_policy_object_privilege_right

Name	Type	Description
change_notify_users	array[string]	Users with traversing bypass privileges.
security_privilege_users	array[string]	Users with security privileges.
take_ownership_users	array[string]	Users who can take ownership of securable objects.

group_policy_object_registry_value

Name	Type	Description
signing_required	boolean	SMB signing required.

group_policy_object_restrict_anonymous

Name	Type	Description
anonymous_access_to_shares_and_named_pipes_restricted	boolean	Restrict anonymous access to shares and named pipes.
combined_restriction_for_anonymous_user	string	Combined restriction for anonymous user.
no_enumeration_of_sam_accounts	boolean	No enumeration of SAM accounts.
no_enumeration_of_sam_accounts_and_shares	boolean	No enumeration of SAM accounts and shares.

group_policy_object_security_setting

Name	Type	Description
event_audit_settings	group_policy_object_event_audit	
event_log_settings	group_policy_object_event_log	
files_or_folders	array[string]	Files/Directories for file security.

Name	Type	Description
kerberos	group_policy_object_kerberos	
privilege_rights	group_policy_object_privilege_right	
registry_values	group_policy_object_registry_value	
restrict_anonymous	group_policy_object_restrict_anonymous	
restricted_groups	array[string]	List of restricted groups.

group_policy_object

Name	Type	Description
central_access_policy_settings	array[string]	List of central access policies.
central_access_policy_staging_audit_type	string	Types of events to be audited.
enabled	boolean	Specifies whether group policies are enabled for the SVM.
extensions	array[string]	List of extensions.
file_system_path	string	File system path.
index	integer	Group policy object index.
ldap_path	string	LDAP path to the GPO.
link	string	Link info.
name	string	
registry_settings	group_policy_object_registry_setting	
security_settings	group_policy_object_security_setting	
svm	svm	Will not be populated for objects that are yet to be applied.
uuid	string	Policy UUID.
version	integer	Group policy object version.

group_policy_object_restricted_group

Name	Type	Description
group_name	string	
link	string	Link info.
members	array[string]	Members of the group.
memberships	array[string]	Group is member of Group/OU.
policy_name	string	
svm	svm	Will not be populated for objects that are yet to be applied.
version	integer	Group policy object version.

to_be_applied

Name	Type	Description
access_policies	array[group_policy_object_central_access_policy]	
access_rules	array[group_policy_object_central_access_rule]	
objects	array[group_policy_object]	
restricted_groups	array[group_policy_object_restricted_group]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Create a background task to update the GPO settings for an SVM

PATCH `/protocols/cifs/group-policies/{svm.uuid}`

Introduced In: 9.12

Creates a background task to update the GPO settings for the specified SVM.
Note: The group policy can be enabled or disabled using "group_policy_object_enabled" field in PATCH "/protocols/cifs/services/{svm.uuid}" API.

Related ONTAP commands

- `vserver cifs group-policy update`

Parameters

Name	Type	In	Required	Description
apply_updates	boolean	query	False	Indicates whether to apply updates or not. • Default value: 1
force_reapply_all_settings	boolean	query	False	Indicates whether or not a re-applying of all settings is enforced. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4456649	Unable to get Group Policy information for SVM.
4456650	Group Policy is disabled for SVM.
4456651	Unable to get CIFS server information for SVM.
4456652	CIFS server is down for SVM.
4456851	An update is already in progress for specified SVM. Wait a few minutes, then try the command again.
4456852	Failed to set forced update for specified SVM. Reason: Internal error. Starting normal update.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve applied central access policies for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/central-access-policies`

Introduced In: 9.12

Retrieves applied central access policies for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy central-access-policy show-applied`

Parameters

Name	Type	In	Required	Description
update_time	string	query	False	Filter by update_time
create_time	string	query	False	Filter by create_time
svm.name	string	query	False	Filter by svm.name
name	string	query	False	Filter by name • minLength: 1
member_rules	string	query	False	Filter by member_rules
description	string	query	False	Filter by description
sid	string	query	False	Filter by sid
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of central access policies.
records	array[group_policy_object_central_access_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "create_time": "2018-01-01 11:00:00 -0500",
      "description": "policy #1",
      "member_rules": [
        "r1",
        "r2"
      ],
      "name": "p1",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "update_time": "2018-01-01 11:00:00 -0500"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object_central_access_policy

Name	Type	Description
create_time	string	Policy creation timestamp.
description	string	Description about the policy.
member_rules	array[string]	Names of all central access rules applied to members.
name	string	

Name	Type	Description
sid	string	Security ID, unique identifier of the central policy.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an applied central access policy for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/central-access-policies/{name}`

Introduced In: 9.12

Retrieves applied central access policy for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy central-access-policy show-applied`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Central access policy name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
create_time	string	Policy creation timestamp.
description	string	Description about the policy.
member_rules	array[string]	Names of all central access rules applied to members.
name	string	
sid	string	Security ID, unique identifier of the central policy.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

Example response

```
{
  "create_time": "2018-01-01 11:00:00 -0500",
  "description": "policy #1",
  "member_rules": [
    "r1",
    "r2"
  ],
  "name": "p1",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "update_time": "2018-01-01 11:00:00 -0500"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve applied central access rules for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/central-access-rules`

Introduced In: 9.12

Retrieves applied central access rules for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy central-access-rule show-applied`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
proposed_permission	string	query	False	Filter by proposed_permission
description	string	query	False	Filter by description
create_time	string	query	False	Filter by create_time
update_time	string	query	False	Filter by update_time
resource_criteria	string	query	False	Filter by resource_criteria
name	string	query	False	Filter by name • minLength: 1
current_permission	string	query	False	Filter by current_permission
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of central access rules.
records	array[group_policy_object_central_access_rule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "create_time": "2018-01-01 11:00:00 -0500",
      "current_permission": "O:SYG:SYD:AR(A;;FA;;;WD)",
      "description": "rule #1",
      "name": "p1",
      "proposed_permission":
"O:SYG:SYD:(A;;FA;;;OW)(A;;FA;;;BA)(A;;FA;;;SY)",
      "resource_criteria": "department",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "update_time": "2018-01-01 11:00:00 -0500"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object_central_access_rule

Name	Type	Description
create_time	string	Policy creation timestamp.
current_permission	string	Effective security policy in security descriptor definition language format.
description	string	Description about the policy.
name	string	

Name	Type	Description
proposed_permission	string	Proposed security policy in security descriptor definition language format.
resource_criteria	string	Criteria to scope resources for which access rules apply.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an applied central access rule for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/central-access-rules/{name}`

Introduced In: 9.12

Retrieves applied central access rule for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy central-access-rule show-applied`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Central access rule name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
create_time	string	Policy creation timestamp.
current_permission	string	Effective security policy in security descriptor definition language format.
description	string	Description about the policy.
name	string	
proposed_permission	string	Proposed security policy in security descriptor definition language format.
resource_criteria	string	Criteria to scope resources for which access rules apply.
svm	svm	Will not be populated for objects that are yet to be applied.
update_time	string	Last policy modification timestamp.

Example response


```
{
  "create_time": "2018-01-01 11:00:00 -0500",
  "current_permission": "O:SYG:SYD:AR(A;;FA;;;WD)",
  "description": "rule #1",
  "name": "p1",
  "proposed_permission":
"O:SYG:SYD:(A;;FA;;;OW)(A;;FA;;;BA)(A;;FA;;;SY)",
  "resource_criteria": "department",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "update_time": "2018-01-01 11:00:00 -0500"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View group policy objects

Protocols CIFS group-policies svm.uuid objects endpoint overview

Overview

When group policy objects (GPO) are enabled on your SMB server, ONTAP sends LDAP queries to the Active Directory server requesting GPO information.
If there are GPO definitions that are applicable to your SMB server, the Active Directory server returns the following GPO information:
• GPO name
• Current GPO version
• Location of the GPO definition
• Lists of UUIDs (universally unique identifiers) for GPO policy sets

Retrieve applied group policy objects for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/objects`

Introduced In: 9.12

Retrieves applied group policy objects for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy show-applied`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
link	string	query	False	Filter by link
enabled	boolean	query	False	Filter by enabled
version	integer	query	False	Filter by version
extensions	string	query	False	Filter by extensions
uuid	string	query	False	Filter by uuid
ldap_path	string	query	False	Filter by ldap_path
central_access_policy_staging_audit_type	string	query	False	Filter by central_access_policy_staging_audit_type

Name	Type	In	Required	Description
security_settings.event_log_settings.retention_method	string	query	False	Filter by security_settings.event_log_settings.retention_method
security_settings.event_log_settings.max_size	integer	query	False	Filter by security_settings.event_log_settings.max_size
security_settings.privilege_rights.security_privilege_users	string	query	False	Filter by security_settings.privilege_rights.security_privilege_users
security_settings.privilege_rights.change_notify_users	string	query	False	Filter by security_settings.privilege_rights.change_notify_users
security_settings.privilege_rights.take_ownership_users	string	query	False	Filter by security_settings.privilege_rights.take_ownership_users
security_settings.registry_values.signing_required	boolean	query	False	Filter by security_settings.registry_values.signing_required
security_settings.restrict_anonymous.no_enumeration_of_sam_accounts	boolean	query	False	Filter by security_settings.restrict_anonymous.no_enumeration_of_sam_accounts
security_settings.restrict_anonymous.no_enumeration_of_sam_accounts_and_shares	boolean	query	False	Filter by security_settings.restrict_anonymous.no_enumeration_of_sam_accounts_and_shares

Name	Type	In	Required	Description
security_settings.restrict_anonymous.anonymous_access_to_shares_and_named_pipes_restricted	boolean	query	False	Filter by security_settings.restrict_anonymous.anonymous_access_to_shares_and_named_pipes_restricted
security_settings.restrict_anonymous.combined_restriction_for_anonymous_user	string	query	False	Filter by security_settings.restrict_anonymous.combined_restriction_for_anonymous_user
security_settings.restricted_groups	string	query	False	Filter by security_settings.restricted_groups
security_settings.event_audit_settings.logon_type	string	query	False	Filter by security_settings.event_audit_settings.logon_type
security_settings.event_audit_settings.object_access_type	string	query	False	Filter by security_settings.event_audit_settings.object_access_type
security_settings.files_or_folders	string	query	False	Filter by security_settings.files_or_folders
security_settings.kerberos.max_renew_age	string	query	False	Filter by security_settings.kerberos.max_renew_age
security_settings.kerberos.max_clock_skew	string	query	False	Filter by security_settings.kerberos.max_clock_skew
security_settings.kerberos.max_ticket_age	string	query	False	Filter by security_settings.kerberos.max_ticket_age
file_system_path	string	query	False	Filter by file_system_path

Name	Type	In	Required	Description
central_access_policy_settings	string	query	False	Filter by central_access_policy_settings
registry_settings.refresh_time_interval	string	query	False	Filter by registry_settings.refresh_time_interval
registry_settings.refresh_time_random_offset	string	query	False	Filter by registry_settings.refresh_time_random_offset
registry_settings.branchcache.supported_hash_version	string	query	False	Filter by registry_settings.branchcache.supported_hash_version
registry_settings.branchcache.hash_publication_mode	string	query	False	Filter by registry_settings.branchcache.hash_publication_mode
name	string	query	False	Filter by name • minLength: 1
index	integer	query	False	Filter by index
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of group policy objects.
records	array[group_policy_object]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "central_access_policy_settings": [
        "p1",
        "p2"
      ],
      "central_access_policy_staging_audit_type": "none",
      "extensions": [
        "audit",
        "security"
      ],
      "file_system_path": "\\test.com\\SysVol\\test.com\\policies
\\{42474212-3f9d-4489-ae01-6fcf4f805d4c}",
      "index": 1,
      "ldap_path": "cn={42474212-3f9d-4489-ae01-
6fcf4f805d4c},cn=policies,cn=system,DC=TEST,DC=COM",
      "link": "domain",
      "name": "test_policy",
      "registry_settings": {
        "branchcache": {
          "hash_publication_mode": "disabled",
          "supported_hash_version": "version1"
        },
        "refresh_time_interval": "P15M",
        "refresh_time_random_offset": "P1D"
      },
      "security_settings": {
        "event_audit_settings": {
          "logon_type": "failure",
          "object_access_type": "failure"
        },
        "event_log_settings": {
          "max_size": 2048,
          "retention_method": "do_not_overwrite"
```

```
        },
        "files_or_folders": [
          "/vol1/home",
          "/vol1/dir1"
        ],
        "kerberos": {
          "max_clock_skew": "P15M",
          "max_renew_age": "P2D",
          "max_ticket_age": "P24H"
        },
        "privilege_rights": {
          "change_notify_users": [
            "usr1",
            "usr2"
          ],
          "security_privilege_users": [
            "usr1",
            "usr2"
          ],
          "take_ownership_users": [
            "usr1",
            "usr2"
          ]
        },
        "restrict_anonymous": {
          "combined_restriction_for_anonymous_user": "no_access"
        },
        "restricted_groups": [
          "test_grp1",
          "test_grp2"
        ]
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "42474212-3f9d-4489-ae01-6fcf4f805d4c",
      "version": 7
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

group_policy_object_branchcache

Name	Type	Description
hash_publication_mode	string	Hash publication mode.
supported_hash_version	string	Hash version.

group_policy_object_registry_setting

Name	Type	Description
branchcache	group_policy_object_branchcache	
refresh_time_interval	string	Refresh time interval in ISO-8601 format.
refresh_time_random_offset	string	Random offset in ISO-8601 format.

group_policy_object_event_audit

Name	Type	Description
logon_type	string	Type of logon event to be audited.
object_access_type	string	Type of object access to be audited.

group_policy_object_event_log

Name	Type	Description
max_size	integer	Maximum size of security log, in kilobytes.
retention_method	string	Audit log retention method.

group_policy_object_kerberos

Name	Type	Description
max_clock_skew	string	Kerberos clock skew in ISO-8601 format.
max_renew_age	string	Kerberos max renew age in ISO-8601 format.
max_ticket_age	string	Kerberos max ticket age in ISO-8601 format.

group_policy_object_privilege_right

Name	Type	Description
change_notify_users	array[string]	Users with traversing bypass privileges.
security_privilege_users	array[string]	Users with security privileges.
take_ownership_users	array[string]	Users who can take ownership of securable objects.

group_policy_object_registry_value

Name	Type	Description
signing_required	boolean	SMB signing required.

group_policy_object_restrict_anonymous

Name	Type	Description
anonymous_access_to_shares_and_named_pipes_restricted	boolean	Restrict anonymous access to shares and named pipes.
combined_restriction_for_anonymous_user	string	Combined restriction for anonymous user.

Name	Type	Description
no_enumeration_of_sam_accounts	boolean	No enumeration of SAM accounts.
no_enumeration_of_sam_accounts_and_shares	boolean	No enumeration of SAM accounts and shares.

group_policy_object_security_setting

Name	Type	Description
event_audit_settings	group_policy_object_event_audit	
event_log_settings	group_policy_object_event_log	
files_or_folders	array[string]	Files/Directories for file security.
kerberos	group_policy_object_kerberos	
privilege_rights	group_policy_object_privilege_right	
registry_values	group_policy_object_registry_value	
restrict_anonymous	group_policy_object_restrict_anonymous	
restricted_groups	array[string]	List of restricted groups.

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object

Name	Type	Description
central_access_policy_settings	array[string]	List of central access policies.
central_access_policy_staging_audit_type	string	Types of events to be audited.
enabled	boolean	Specifies whether group policies are enabled for the SVM.
extensions	array[string]	List of extensions.
file_system_path	string	File system path.
index	integer	Group policy object index.
ldap_path	string	LDAP path to the GPO.
link	string	Link info.
name	string	
registry_settings	group_policy_object_registry_setting	
security_settings	group_policy_object_security_setting	
svm	svm	Will not be populated for objects that are yet to be applied.
uuid	string	Policy UUID.
version	integer	Group policy object version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an applied group policy object for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/objects/{index}`

Introduced In: 9.12

Retrieves applied group policy object for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy show-applied`

Parameters

Name	Type	In	Required	Description
index	integer	path	True	Restricted group index.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
central_access_policy_settings	array[string]	List of central access policies.
central_access_policy_staging_audit_type	string	Types of events to be audited.

Name	Type	Description
enabled	boolean	Specifies whether group policies are enabled for the SVM.
extensions	array[string]	List of extensions.
file_system_path	string	File system path.
index	integer	Group policy object index.
ldap_path	string	LDAP path to the GPO.
link	string	Link info.
name	string	
registry_settings	group_policy_object_registry_setting	
security_settings	group_policy_object_security_setting	
svm	svm	Will not be populated for objects that are yet to be applied.
uuid	string	Policy UUID.
version	integer	Group policy object version.

Example response


```
{
  "central_access_policy_settings": [
    "p1",
    "p2"
  ],
  "central_access_policy_staging_audit_type": "none",
  "extensions": [
    "audit",
    "security"
  ],
  "file_system_path": "\\test.com\\SysVol\\test.com\\policies
\\{42474212-3f9d-4489-ae01-6fcf4f805d4c}",
  "index": 1,
  "ldap_path": "cn={42474212-3f9d-4489-ae01-
6fcf4f805d4c},cn=policies,cn=system,DC=TEST,DC=COM",
  "link": "domain",
  "name": "test_policy",
  "registry_settings": {
    "branchcache": {
      "hash_publication_mode": "disabled",
      "supported_hash_version": "version1"
    },
    "refresh_time_interval": "P15M",
    "refresh_time_random_offset": "P1D"
  },
  "security_settings": {
    "event_audit_settings": {
      "logon_type": "failure",
      "object_access_type": "failure"
    },
    "event_log_settings": {
      "max_size": 2048,
      "retention_method": "do_not_overwrite"
    },
    "files_or_folders": [
      "/vol1/home",
      "/vol1/dir1"
    ],
    "kerberos": {
      "max_clock_skew": "P15M",
      "max_renew_age": "P2D",
      "max_ticket_age": "P24H"
    },
    "privilege_rights": {
```

```
      "change_notify_users": [
        "usr1",
        "usr2"
      ],
      "security_privilege_users": [
        "usr1",
        "usr2"
      ],
      "take_ownership_users": [
        "usr1",
        "usr2"
      ]
    },
    "restrict_anonymous": {
      "combined_restriction_for_anonymous_user": "no_access"
    },
    "restricted_groups": [
      "test_grp1",
      "test_grp2"
    ]
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "42474212-3f9d-4489-ae01-6fcf4f805d4c",
  "version": 7
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

group_policy_object_branchcache

Name	Type	Description
hash_publication_mode	string	Hash publication mode.
supported_hash_version	string	Hash version.

group_policy_object_registry_setting

Name	Type	Description
branchcache	group_policy_object_branchcache	
refresh_time_interval	string	Refresh time interval in ISO-8601 format.
refresh_time_random_offset	string	Random offset in ISO-8601 format.

group_policy_object_event_audit

Name	Type	Description
logon_type	string	Type of logon event to be audited.
object_access_type	string	Type of object access to be audited.

group_policy_object_event_log

Name	Type	Description
max_size	integer	Maximum size of security log, in kilobytes.
retention_method	string	Audit log retention method.

group_policy_object_kerberos

Name	Type	Description
max_clock_skew	string	Kerberos clock skew in ISO-8601 format.

Name	Type	Description
max_renew_age	string	Kerberos max renew age in ISO-8601 format.
max_ticket_age	string	Kerberos max ticket age in ISO-8601 format.

group_policy_object_privilege_right

Name	Type	Description
change_notify_users	array[string]	Users with traversing bypass privileges.
security_privilege_users	array[string]	Users with security privileges.
take_ownership_users	array[string]	Users who can take ownership of securable objects.

group_policy_object_registry_value

Name	Type	Description
signing_required	boolean	SMB signing required.

group_policy_object_restrict_anonymous

Name	Type	Description
anonymous_access_to_shares_and_named_pipes_restricted	boolean	Restrict anonymous access to shares and named pipes.
combined_restriction_for_anonymous_user	string	Combined restriction for anonymous user.
no_enumeration_of_sam_accounts	boolean	No enumeration of SAM accounts.
no_enumeration_of_sam_accounts_and_shares	boolean	No enumeration of SAM accounts and shares.

group_policy_object_security_setting

Name	Type	Description
event_audit_settings	group_policy_object_event_audit	
event_log_settings	group_policy_object_event_log	

Name	Type	Description
files_or_folders	array[string]	Files/Directories for file security.
kerberos	group_policy_object_kerberos	
privilege_rights	group_policy_object_privilege_right	
registry_values	group_policy_object_registry_value	
restrict_anonymous	group_policy_object_restrict_anonymous	
restricted_groups	array[string]	List of restricted groups.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve applied restricted group policies for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/restricted-groups`

Introduced In: 9.12

Retrieves applied policies of restricted groups for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy restricted-group show-applied`

Parameters

Name	Type	In	Required	Description
group_name	string	query	False	Filter by group_name • minLength: 1
memberships	string	query	False	Filter by memberships
members	string	query	False	Filter by members
version	integer	query	False	Filter by version
link	string	query	False	Filter by link
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
policy_name	string	query	False	Filter by policy_name • minLength: 1
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of restricted group info.
records	array[group_policy_object_restricted_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "group_name": "test_group",
      "link": "domain",
      "members": [
        "DOMAIN/test_user",
        "DOMAIN/user2"
      ],
      "memberships": [
        "DOMAIN/AdministratorGrp",
        "DOMAIN/deptMark"
      ],
      "policy_name": "test_policy",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "version": 7
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_policy_object_restricted_group

Name	Type	Description
group_name	string	
link	string	Link info.
members	array[string]	Members of the group.
memberships	array[string]	Group is member of Group/OU.
policy_name	string	

Name	Type	Description
svm	svm	Will not be populated for objects that are yet to be applied.
version	integer	Group policy object version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an applied restricted group policy for an SVM

GET `/protocols/cifs/group-policies/{svm.uuid}/restricted-groups/{policy_index}/{group_name}`

Introduced In: 9.12

Retrieves applied policy of restricted group for specified SVM.

Related ONTAP commands

- `vserver cifs group-policy restricted-group show-applied`

Parameters

Name	Type	In	Required	Description
policy_index	integer	path	True	Group policy index.

Name	Type	In	Required	Description
group_name	string	path	True	Group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
group_name	string	
link	string	Link info.
members	array[string]	Members of the group.
memberships	array[string]	Group is member of Group/OU.
policy_name	string	
svm	svm	Will not be populated for objects that are yet to be applied.
version	integer	Group policy object version.

Example response

```
{
  "group_name": "test_group",
  "link": "domain",
  "members": [
    "DOMAIN/test_user",
    "DOMAIN/user2"
  ],
  "memberships": [
    "DOMAIN/AdministratorGrp",
    "DOMAIN/deptMark"
  ],
  "policy_name": "test_policy",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "version": 7
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Will not be populated for objects that are yet to be applied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage home directory search paths

Protocols CIFS home-directory search-paths endpoint overview

Overview

ONTAP home directory functionality can be used to create home directories for SMB users on the CIFS server and automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user.

The home directory search path is a set of absolute paths from the root of an SVM that directs ONTAP to search for home directories. If there are multiple search paths, ONTAP tries them in the order specified until it finds a valid path. To use the CIFS home directories feature, at least one home directory search path must be added for an SVM.

Examples

Creating a home directory search path

To create a home directory search path, use the following API. Note the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/cifs/home-directory/search-paths

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/home-directory/search-
paths?return_records=true" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"path\": \"/\", \"svm\": { \"name\": \"vs1\",
\"uuid\": \"a41fd873-ecf8-11e8-899d-0050568e9333\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "a41fd873-ecf8-11e8-899d-0050568e9333",
      "name": "vs1"
    },
  "path": "/"
  }
]
}
```

Retrieving the CIFS home directory search paths configuration for all SVMs in the cluster

```
# The API:
GET /protocols/cifs/home-directory/search-paths

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/home-directory/search-
paths?fields=*&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "2d96f9aa-f4ce-11e8-b075-0050568e278e",
      "name": "vs1"
    },
    "index": 1,
    "path": "/"
  },
  {
    "svm": {
      "uuid": "2d96f9aa-f4ce-11e8-b075-0050568e278e",
      "name": "vs1"
    },
      "index": 2,
      "path": "/a"
  },
  {
    "svm": {
      "uuid": "4f23449b-f4ce-11e8-b075-0050568e278e",
      "name": "vs2"
    },
    "index": 1,
    "path": "/"
  },
  {
    "svm": {
      "uuid": "4f23449b-f4ce-11e8-b075-0050568e278e",
      "name": "vs2"
    },
    "index": 2,
    "path": "/1"
  }
],
```

```
"num_records": 4
}
```

Retrieving a specific home directory searchpath configuration for an SVM

The configuration returned is identified by the UUID of its SVM and the index (position) in the list of search paths that is searched to find a home directory of a user.

```
# The API:
GET /api/protocols/home-directory/search-paths/{svm.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/home-directory/search-
paths/2d96f9aa-f4ce-11e8-b075-0050568e278e/2" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "2d96f9aa-f4ce-11e8-b075-0050568e278e",
  "name": "vs1"
},
"index": 2,
"path": "/a"
}
```

Reordering a specific home directory search path in the list

An entry in the home directory search path list can be reordered to a new positin by specifying the 'new_index' field. The reordered configuration is identified by the UUID of its SVM and the index.

```
# The API:
PATCH /api/protocols/cifs/home-directory/search-paths/{svm.uuid}/{index}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/home-directory/search-
paths/2d96f9aa-f4ce-11e8-b075-0050568e278e/2?new_index=1" -H "accept:
application/json"
```

Removing a specific home directory search path for an SVM

The entry being removed is identified by the UUID of its SVM and the index.

```
# The API:
DELETE /api/protocols/cifs/home-directory/search-paths/{svm.uuid}/{index}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/home-
directory/search-paths/2d96f9aa-f4ce-11e8-b075-0050568e278e/2" -H "accept:
application/json"
```

Retrieve CIFS home directory search paths

GET `/protocols/cifs/home-directory/search-paths`

Introduced In: 9.6

Retrieves CIFS home directory search paths.

Related ONTAP commands

- `cifs server home-directory search-path show`

Learn more

- DOC /protocols/cifs/home-directory/search-paths

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
path	string	query	False	Filter by path
index	integer	query	False	Filter by index
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_search_path]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "index": 0,
      "path": "/HomeDirectory/EngDomain",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_search_path

This is a list of CIFS home directory search paths. When a CIFS client connects to a home directory share, these paths are searched in the order indicated by the position field to find the home directory of the connected CIFS client.

Name	Type	Description
index	integer	The position in the list of paths that is searched to find the home directory of the CIFS client. Not available in POST.

Name	Type	Description
path	string	The file system path that is searched to find the home directory of the CIFS client.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a home directory search path

POST `/protocols/cifs/home-directory/search-paths`

Introduced In: 9.6

Creates a home directory search path.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the home directory search path.
- `path` - Path in the owning SVM namespace that is used to search for home directories.

Related ONTAP commands

- `cifs server home-directory search-path add`

Learn more

- DOC /protocols/cifs/home-directory/search-paths

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
index	integer	The position in the list of paths that is searched to find the home directory of the CIFS client. Not available in POST.
path	string	The file system path that is searched to find the home directory of the CIFS client.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "index": 0,
  "path": "/HomeDirectory/EngDomain",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[cifs_search_path]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "index": 0,
      "path": "/HomeDirectory/EngDomain",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655551	Invalid home-directory search-path path
655462	The specified path is an invalid file-type

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_search_path

This is a list of CIFS home directory search paths. When a CIFS client connects to a home directory share, these paths are searched in the order indicated by the position field to find the home directory of the connected CIFS client.

Name	Type	Description
index	integer	The position in the list of paths that is searched to find the home directory of the CIFS client. Not available in POST.
path	string	The file system path that is searched to find the home directory of the CIFS client.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a CIFS home directory search path

DELETE `/protocols/cifs/home-directory/search-paths/{svm.uuid}/{index}`

Introduced In: 9.6

Deletes a CIFS home directory search path.

Related ONTAP commands

- `cifs server home-directory search-path remove`

Learn more

- DOC /protocols/cifs/home-directory/search-paths

Parameters

Name	Type	In	Required	Description
index	integer	path	True	Home directory search path index
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a CIFS home directory search path for an SVM

GET `/protocols/cifs/home-directory/search-paths/{svm.uuid}/{index}`

Introduced In: 9.6

Retrieves a CIFS home directory search path of an SVM.

Related ONTAP commands

- `cifs server home-directory search-path show`

Learn more

- DOC /protocols/cifs/home-directory/search-paths

Parameters

Name	Type	In	Required	Description
index	integer	path	True	Home directory search path index
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
index	integer	The position in the list of paths that is searched to find the home directory of the CIFS client. Not available in POST.
path	string	The file system path that is searched to find the home directory of the CIFS client.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "index": 0,
  "path": "/HomeDirectory/EngDomain",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Re-order a CIFS home directory search path

PATCH `/protocols/cifs/home-directory/search-paths/{svm.uuid}/{index}`

Introduced In: 9.6

Reorders a CIFS home directory search path.

Related ONTAP commands

- `cifs server home-directory search-path reorder`

Learn more

- DOC /protocols/cifs/home-directory/search-paths

Parameters

Name	Type	In	Required	Description
index	integer	path	True	Home directory search path index
new_index	integer	query	False	New position for the home directory search path
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655463	Failed to reorder the search-path because the new-index is invalid. It cannot be '0' and it cannot go beyond the current entries

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage local groups

Protocols CIFS local-groups endpoint overview

Overview

The CIFS server can use local groups for authorization when determining share, file and directory access rights.
You can use this API to display local group information and to control local group configurations.

Retrieving local group information

The local group GET endpoint retrieves all of the local groups configurations for data SVMs.

Examples

Retrieving all of the fields for all of the local group configurations

The local group GET endpoint retrieves all of the local groups configurations for data SVMs.

```
# The API:
/api/protocols/cifs/local-groups

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-groups?fields=**"
-H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-32-544",
    "name": "BUILTIN\\Administrators",
    "description": "Built-in Administrators group",
    "members": [
      {
        "name": "CIFS_SERVER\\Administrator"
      },
      {
        "name": "AD_DOMAIN\\Domain Admins"
      }
    ]
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-32-545",
    "name": "BUILTIN\\Users",
    "description": "All users",
    "members": [
      {
        "name": "AD_DOMAIN\\Domain Users"
      }
    ]
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-32-546",
    "name": "BUILTIN\\Guests",
    "description": "Built-in Guests Group",
    "members": [
```

```
      {
        "name": "SACHILDAP02\\Domain Guests"
      }
    ]
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-32-547",
    "name": "BUILTIN\\Power Users",
    "description": "Restricted administrative privileges"
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-32-551",
    "name": "BUILTIN\\Backup Operators",
    "description": "Backup Operators group"
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
    "name": "CIFS_SERVER\\group2",
    "description": "local group2"
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
      "name": "vs2"
    },
    "sid": "S-1-5-32-544",
    "name": "BUILTIN\\Administrators",
    "description": "Built-in Administrators group",
    "members": [
      {
        "name": "VS2.CIFS\\Administrator"
      },
      {
        "name": "VS2.CIFS\\user3"
```

```
      },
      {
        "name": "SACHILDAP02\\Domain Admins"
      }
    ]
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
      "name": "vs2"
    },
    "sid": "S-1-5-32-545",
    "name": "BUILTIN\\Users",
    "description": "All users",
    "members": [
      {
        "name": "SACHILDAP02\\Domain Users"
      }
    ]
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
      "name": "vs2"
    },
    "sid": "S-1-5-32-546",
    "name": "BUILTIN\\Guests",
    "description": "Built-in Guests Group",
    "members": [
      {
        "name": "SACHILDAP02\\Domain Guests"
      }
    ]
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
      "name": "vs2"
    },
    "sid": "S-1-5-32-547",
    "name": "BUILTIN\\Power Users",
    "description": "Restricted administrative privileges"
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
```

```
      "name": "vs2"
    },
    "sid": "S-1-5-32-551",
    "name": "BUILTIN\\Backup Operators",
    "description": "Backup Operators group"
  },
  {
    "svm": {
      "uuid": "5060077c-5be6-11eb-90b7-0050568e5169",
      "name": "vs2"
    },
    "sid": "S-1-5-21-1625922807-3304708894-3529444428-1001",
    "name": "CIFS_SERVER\\group1",
    "description": "local group1"
  }
],
"num_records": 12
}
```


Retrieving a local group configuration of a specific SVM and group

```
# The API:
/api/protocols/cifs/local-groups/{svm.uuid}/{sid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-groups/25b363a6-
2971-11eb-88e1-0050568eefd4/S-1-5-21-256008430-3394229847-3930036330-1001"
-H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
  "name": "vs1"
},
"sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
"name": "CIFS_SERVER\\group1",
"description": "local group"
}
```

Creating a local group configuration

The local group POST endpoint creates a local group configuration for the specified SVM.

Example

```
# The API:
/api/protocols/cifs/local-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/local-groups" -H
"accept: application/json" -H "Content-Type: application/json" -d '{
"svm": {"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1"}, "name":
"group1"}'
```

Updating a local group configuration

The local group PATCH endpoint updates the name and description of the specified local group and the specified SVM.

Example

Update the local group name from 'group1' to 'group2'

```
# The API:
/api/protocols/local-groups/{svm.uuid}/{sid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/local-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/S-1-5-21-256008430-3394229847-3930036330-1257"
-H "accept: application/json" -H "Content-Type: application/json" -d '{
"name": "group2", "description": "local group"}'
```

Deleting a local group configuration

The local group DELETE endpoint deletes the specified local group of the specified SVM.

Example

Delete the local group 'group1'

```
# The API:
/api/protocols/cifs/local-groups/{svm.uuid}/{sid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/local-
groups/179d3c85-7053-11e8-b9b8-005056b41bd1/S-1-5-21-256008430-3394229847-
3930036330-1001" -H "accept: application/json"
```

Retrieve local groups for all SVMs

GET `/protocols/cifs/local-groups`

Introduced In: 9.9

Retrieves the local groups for all of the SVMs.

Advanced properties

- `members`

Related ONTAP commands

- `vserver cifs users-and-groups local-group show`
- `vserver cifs users-and-groups local-group show-members`

Learn more

- DOC /protocols/cifs/local-groups

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
name	string	query	False	Filter by name • minLength: 1
description	string	query	False	Filter by description • maxLength: 256
members.name	string	query	False	Filter by members.name
sid	string	query	False	Filter by sid • Introduced in: 9.10
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of local group records.
records	array[local_cifs_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "description": "This is a local group",
      "members": [
        {
          "name": "string"
        }
      ],
      "name": "SMB_SERVER01\\group",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

members

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group

Name	Type	Description
_links	_links	

Name	Type	Description
description	string	Description for the local group.
members	array[members]	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the local group configuration for an SVM

POST `/protocols/cifs/local-groups`

Introduced In: 9.9

Creates the local group configuration for the specified SVM.

Important notes

- The group name can contain up to 256 characters.
- The group name cannot be terminated by a period.
- The group name does not support any of the following characters: " / ? [ ] , : \| < > + = ; ? * @ or ASCII characters in the range 1-31.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the local group.
- `name` - Name of the local group.

Related ONTAP commands

- `vserver cifs users-and-groups local-group create`

Learn more

- DOC /protocols/cifs/local-groups

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
description	string	Description for the local group.
members	array[members]	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "description": "This is a local group",
  "members": [
    {
      "name": "string"
    }
  ],
  "name": "SMB_SERVER01\\group",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262278	Name is a required field.
655399	CIFS server must exist to create a local group.
655660	The operation is allowed only on data SVMs.
655661	The group name and description should not exceed 256 characters.
655668	The specified group name contains illegal characters.

Error Code	Description
655675	The local domain name specified in the group name does not exist.
655677	This operation does not allow for the creation of a group in the BUILTIN domain.
655682	The group name cannot be blank.
655717	The specified group name already exists.
2621706	The specified SVM UUID is incorrect for the specified SVM name.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

members

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group

Name	Type	Description
description	string	Description for the local group.
members	array[members]	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a local group configuration for an SVM

DELETE `/protocols/cifs/local-groups/{svm.uuid}/{sid}`

Introduced In: 9.10

Deletes a local group configuration for the specified SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-group delete`

Learn more

- DOC /protocols/cifs/local-groups

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local group SID

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve local group information for a group and SVM

GET `/protocols/cifs/local-groups/{svm.uuid}/{sid}`

Introduced In: 9.10

Retrieves local group information for the specified group and SVM.

Advanced properties

- `members`

Related ONTAP commands

- `vserver cifs users-and-groups local-group show`
- `vserver cifs users-and-groups local-group show-members`

Learn more

- DOC /protocols/cifs/local-groups

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local group SID
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
description	string	Description for the local group.
members	array[members]	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "This is a local group",
  "members": [
    {
      "name": "string"
    }
  ],
  "name": "SMB_SERVER01\\group",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

members

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update local group information for a group in an SVM

PATCH `/protocols/cifs/local-groups/{svm.uuid}/{sid}`

Introduced In: 9.10

Updates the local group information of the specified group in the specified SVM. This API can also be used to rename a local group.

Related ONTAP commands

- `vserver cifs users-and-groups local-group modify`
- `vserver cifs users-and-groups local-group rename`

Learn more

- DOC /protocols/cifs/local-groups

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local group SID
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
description	string	Description for the local group.
members	array[members]	

Name	Type	Description
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "description": "This is a local group",
  "members": [
    {}
  ],
  "name": "SMB_SERVER01\\group",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655661	The group name and description should not exceed 256 characters.

Error Code	Description
655668	The specified group name contains illegal characters.
655675	The local domain name specified in the group name does not exist.
655682	The group name cannot be blank.
655712	To rename an existing group, the local domain specified in name must match the local domain of the group to be renamed.
655713	Failed to rename a group. The error code returned details the failure along with the reason for the failure. Take corrective actions as per the specified reason.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

members

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group

Name	Type	Description
description	string	Description for the local group.
members	array[members]	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage local group members

Protocols CIFS local-groups svm.uuid local_cifs_group.sid members endpoint overview

Overview

You can use this API to display local group members and to add or delete local users, Active Directory users and/or Active Directory groups to a local group of an SVM.

Examples

Retrieving the members of a specific local group

```
# The API:
/api/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-groups/2ebec9c7-
28be-11eb-95f4-0050568ed0a2/S-1-5-21-256008430-3394229847-3930036330-
1257/members" -H "accept: application/json"

# The response:
{
"records": [
  {
    "name": "CIFS_SERVER1\\user1"
  },
  {
    "name": "CIFS_SERVER1\\user2"
  }
],
"num_records": 2
}
```

Adding members to a local group

The local group members POST endpoint adds local users, Active Directory users and/or Active Directory groups to the specified local group and the SVM.

Adding local users to a group

```
# The API:
/api/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/local-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/S-1-5-21-256008430-3394229847-3930036330-
1001/members" -H "accept: application/json" -H "Content-Type:
application/json" -d '{ "records": [ { "name": "user1" }, { "name":
"user2"} ] }'
```

Deleting local users from the local group of a specific SVM

Example

Delete the local users 'user1' and 'user2' from the specified local group

```
# The API:
/api/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/local-
groups/179d3c85-7053-11e8-b9b8-005056b41bd1/S-1-5-21-256008430-3394229847-
3930036330-1001/members" -H "accept: application/json" -d '{ "records": [
{ "name": "user1"}, { "name": "user2"} ] }'
```

Delete local users or Active Directory users and groups from a local group and SVM

DELETE `/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members`

Introduced In: 9.10

Deletes the local users, Active Directory users and/or Active Directory groups from the specified local group and SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-group remove-members`

Learn more

- DOC /protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

Parameters

Name	Type	In	Required	Description
local_cifs_group.sid	string	path	True	Local group SID
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
local_cifs_group	local_cifs_group	

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.
records	array[records]	An array of local users, Active Directory users, and Active Directory groups specified to add or delete multiple members to or from a local group in a single API call. Not allowed when the `name` property is used.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "local_cifs_group": {
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
  },
  "name": "string",
  "records": [
    {
      "name": "string"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error ontap error response codes | error code |
description | | ---------- | ----------- | | 655673     | failed to
resolve the member to be deleted from the specified group. | | 655719
| failed to delete a member from the specified group. the error code
returned details the failure along with the reason for the failure. take
corrective actions as per the specified reason. | | 655742     | records
must not be specified when member name is specified. | | 655743     | svm
uuid and cifs local group sid are invalid fields for the "records"
parameter. |
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

local_cifs_group

Name	Type	Description
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

records

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group_members

Name	Type	Description
local_cifs_group	local_cifs_group	
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.
records	array[records]	An array of local users, Active Directory users, and Active Directory groups specified to add or delete multiple members to or from a local group in a single API call. Not allowed when the `name` property is used.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve local users and Active Directory users and groups that belong to a local group and SVM

GET `/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members`

Introduced In: 9.10

Retrieves local users, Active Directory users and Active Directory groups which are members of the specified

local group and SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-group show-members`

Learn more

- DOC /protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

Parameters

Name	Type	In	Required	Description
local_cifs_group.sid	string	path	True	Local group SID
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	svm.uuid	string	path	True

Name	Type	In	Required	Description
UUID of the SVM to which this object belongs.	fields	array[string]	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of local group records.
records	array[local_cifs_group_members]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "local_cifs_group": {
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
      },
      "name": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

local_cifs_group

Name	Type	Description
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

records

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group_members

Name	Type	Description
local_cifs_group	local_cifs_group	
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add local users and Active Directory users and groups to a local group and SVM

POST `/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members`

Introduced In: 9.10

Adds local users, Active Directory users and Active Directory groups to the specified local group and SVM.

Important note

- Specified members are appended to the existing list of members.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM for which members are added to local group.
- `local_cifs_group.sid` - Security ID of the local group to which members are added.
- `name` or `records` - Local users, Active Directory users, or Active Directory groups to be added to a particular local group.

Related ONTAP commands

- `vserver cifs users-and-groups local-group add-members`

Learn more

- DOC /protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

Parameters

Name	Type	In	Required	Description
local_cifs_group.sid	string	path	True	Local group SID
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
local_cifs_group	local_cifs_group	
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

Name	Type	Description
records	array[records]	An array of local users, Active Directory users, and Active Directory groups specified to add or delete multiple members to or from a local group in a single API call. Not allowed when the `name` property is used.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "local_cifs_group": {
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
  },
  "name": "string",
  "records": [
    {
      "name": "string"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655673	Failed to resolve the member to be added to the specified group.
655718	Failed to add a member to the specified group. The error code returned details the failure along with the reason for the failure. Take corrective actions as per the specified reason.
655742	Records must not be specified when member name is specified.
655743	SVM UUID and CIFS local group SID are invalid fields for the "records" parameter.
655744	Either name or records must be specified.

Definitions

See Definitions

local_cifs_group

Name	Type	Description
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

records

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_group_members

Name	Type	Description
local_cifs_group	local_cifs_group	

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.
records	array[records]	An array of local users, Active Directory users, and Active Directory groups specified to add or delete multiple members to or from a local group in a single API call. Not allowed when the `name` property is used.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a local user, or Active Directory user or group from a local group and SVM

DELETE `/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members/{name}`

Introduced In: 9.10

Deletes the local user, Active Directory user and/or Active Directory group from the specified local group and

SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-group remove-members`

Learn more

- DOC /protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

Parameters

Name	Type	In	Required	Description
local_cifs_group.sid	string	path	True	Local group SID
name	string	path	True	Member name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error ontap error response codes | error code |
description | | ---------- | ----------- | | 655673     | failed to
resolve the member to be deleted from the specified group. | | 655719
| failed to delete a member from the specified group. the error code
returned details the failure along with the reason for the failure. take
corrective actions as per the specified reason. |
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a local user, Active Directory user or group belonging to a local group and SVM

GET `/protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members/{name}`

Introduced In: 9.10

Retrieves local user, Active Directory user and Active Directory group which is member of the specified local group and SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-group show-members`

Learn more

- DOC /protocols/cifs/local-groups/{svm.uuid}/{local_cifs_group.sid}/members

Parameters

Name	Type	In	Required	Description
local_cifs_group.sid	string	path	True	Local group SID
name	string	path	True	Member name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
local_cifs_group	local_cifs_group	
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "local_cifs_group": {
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
  },
  "name": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

local_cifs_group

Name	Type	Description
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

records

Name	Type	Description
name	string	Local user, Active Directory user, or Active Directory group which is a member of the specified local group.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage local users

Protocols CIFS local-users endpoint overview

Overview

The CIFS server can use local users for CIFS authentication. The local users can also be used for authorization when determining both share and file/directory access rights to data residing on the storage virtual machine (SVM).
You can use this API to display local user information and to control local user configurations.

Retrieving local user information

You can use the local user GET endpoint to retrieve all of the local user configurations for data SVMs.

Examples

Retrieving all of the fields for local user configurations for all SVMs

```
# The API:
/api/protocols/cifs/local-users

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-users?fields=**"
-H "accept: application/json"

# The response:
```

```
{
"records": [
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-500",
    "name": "CIFS_SERVER1\\Administrator",
    "full_name": "",
    "description": "Built-in administrator account",
    "account_disabled": false,
    "membership": [
      {
        "name": "BUILTIN\\Administrators",
        "sid": "S-1-5-32-544"
      }
    ]
  },
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
    "name": "CIFS_SERVER1\\user1",
    "full_name": "local user1",
    "description": "This is CIFS local user",
    "account_disabled": false
  },
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1002",
    "name": "CIFS_SERVER1\\user2",
    "full_name": "local user2",
    "description": "This is CIFS local user",
    "account_disabled": false,
    "membership": [
      {
        "name": "CIFS_SERVER1\\grp1",
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
      },
      {
```

```
        "name": "CIFS_SERVER1\\grp2",
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1002"
      }
    ]
  },
  {
    "svm": {
      "uuid": "3f479a01-2971-11eb-88e1-0050568eefd4",
      "name": "vs2"
    },
    "sid": "S-1-5-21-1625922807-3304708894-3529444428-500",
    "name": "CIFS_SERVER2\\Administrator",
    "full_name": "",
    "description": "Built-in administrator account",
    "account_disabled": false,
    "membership": [
      {
        "name": "BUILTIN\\Administrators",
        "sid": "S-1-5-32-544"
      }
    ]
  },
  {
    "svm": {
      "uuid": "3f479a01-2971-11eb-88e1-0050568eefd4",
      "name": "vs2"
    },
    "sid": "S-1-5-21-1625922807-3304708894-3529444428-1001",
    "name": "CIFS_SERVER2\\user1",
    "full_name": "local user1",
    "description": "This is CIFS local user",
    "account_disabled": false
  }
],
"num_records": 5
}
```


Retrieving the local user configuration of a specific SVM

```
# The API:
/api/protocols/cifs/local-users
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-
users?svm.uuid=25b363a6-2971-11eb-88e1-0050568eefd4&fields=**" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-500",
    "name": "CIFS_SERVER1\\Administrator",
    "full_name": "",
    "description": "Built-in administrator account",
    "account_disabled": false,
    "membership": [
      {
        "name": "BUILTIN\\Administrators",
        "sid": "S-1-5-32-544"
      }
    ]
  },
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
    "name": "CIFS_SERVER1\\user1",
    "full_name": "local user1",
    "description": "This is CIFS local user",
    "account_disabled": false
  },
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "sid": "S-1-5-21-256008430-3394229847-3930036330-1002",
    "name": "CIFS_SERVER1\\user2",
    "full_name": "local user2",
    "description": "This is CIFS local user",
    "account_disabled": false,
```

```
    "membership": [
      {
        "name": "CIFS_SERVER1\\grp1",
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
      },
      {
        "name": "CIFS_SERVER1\\grp2",
        "sid": "S-1-5-21-256008430-3394229847-3930036330-1002"
      }
    ]
  },
],
"num_records": 3
}
```

Retrieving a local user configuration of a specific SVM and user

```
# The API:
/api/protocols/cifs/local-users/{svm.uuid}/{sid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/local-users/25b363a6-
2971-11eb-88e1-0050568eefd4/S-1-5-21-1625922807-3304708894-3529444428-
1001" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
  "name": "vs1"
},
"sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
"name": "CIFS_SERVER1\\user1",
"full_name": "local user1",
"description": "This is CIFS local user",
"account_disabled": false
}
```

Creating a local user configuration

The local user POST endpoint creates a local user configuration for the specified SVM.

Examples

Creating a local user configuration with all fields specified

```
# The API:
/api/protocols/cifs/local-users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/local-users" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"account_disabled\": false, \"description\": \"This is local user.\",
\"full_name\": \"user name\", \"name\": \"SMB_SERVER01\\\\user\",
\"password\": \"netapp1N\", \"svm\": { \"name\": \"vs1\", \"uuid\":
\"25b363a6-2971-11eb-88e1-0050568eefd4\" }}"
```

Creating a local user configuration with only mandatory fields specified

```
# The API:
/api/protocols/cifs/local-users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/local-users" -H
"accept: application/json" -d "{ \"name\": \"user1\", \"password\":
\"netapp1N\", \"svm\": { \"uuid\": \"25b363a6-2971-11eb-88e1-
0050568eefd4\" }}"
```

Updating a local user configuration

The local user PATCH endpoint updates the local user configuration for the specified user and SVM.

Updating a local user name and password

```
# The API:
/api/protocols/cifs/local-users/{svm.uuid}/{sid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/local-users/25b363a6-
2971-11eb-88e1-0050568eefd4/S-1-5-21-1625922807-3304708894-3529444428-
1001" -H "accept: application/json" -d "{ \"name\": \"new_user1\",
\"password\": \"netapp1Net\" }"
```

Deleting a local user configuration

The local user DELETE endpoint deletes the specified local user for the specified SVM. The following example shows a DELETE operation:

```
# The API:
/api/protocols/cifs/local-users/{svm.uuid}/{sid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/local-users/25b363a6-
2971-11eb-88e1-0050568eefd4/S-1-5-21-1625922807-3304708894-3529444428-
1001" -H "accept: application/json"
```

Retrieve local users for all SVMs

GET `/protocols/cifs/local-users`

Introduced In: 9.9

Retrieves local users for all of the SVMs. Local groups to which this user belongs to are also displayed.

Advanced properties

- `membership`

Related ONTAP commands

- `vserver cifs users-and-groups local-user show`
- `vserver cifs users-and-groups local-user show-membership`

Learn more

- DOC /protocols/cifs/local-users

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name • minLength: 1
membership.sid	string	query	False	Filter by membership.sid • Introduced in: 9.10
membership.name	string	query	False	Filter by membership.name • minLength: 1
full_name	string	query	False	Filter by full_name • maxLength: 256
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
account_disabled	boolean	query	False	Filter by account_disabled
sid	string	query	False	Filter by sid • Introduced in: 9.10
description	string	query	False	Filter by description • maxLength: 256
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of local user records.
records	array[local_cifs_user]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "description": "This is local user.",
      "full_name": "user name",
      "membership": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "SMB_SERVER01\\group",
          "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
        }
      ],
      "name": "SMB_SERVER01\\user",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

membership

Name	Type	Description
_links	_links	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_user

Name	Type	Description
_links	_links	
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.
membership	array[membership]	Specifies local groups of which this local user is a member.
name	string	Local user name. The maximum supported length of an user name is 20 characters.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the local user configuration for an SVM

POST `/protocols/cifs/local-users`

Introduced In: 9.9

Creates the local user configuration for an SVM.

Important notes

- The user name can contain up to 20 characters.
- The user name cannot be terminated by a period.
- The user name does not support any of the following characters: " / ? [ ] , : \| < > + = ; ? * @ or ASCII characters in the range 1-31.
- The password must be at least six characters in length and must not contain the user account name.
- The password must contain characters from three of the following four categories:
- English uppercase characters (A through Z)
- English lowercase characters (a through z)
- Base 10 digits (0 through 9)
- Special characters: ~ ! @ # 0 ^ & * _ - + = ` ? \| ( ) [ ] : ; " ' < > , . ? /

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the local user.
- `name` - Name of the local user.
- `password` - Password for the local user.

Default property values

If not specified in POST, the following default property value is assigned:

- `account_disabled` - false

Related ONTAP commands

- `vserver cifs users-and-groups local-user create`

Learn more

- DOC /protocols/cifs/local-users

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.
membership	array[membership]	Specifies local groups of which this local user is a member.
name	string	Local user name. The maximum supported length of an user name is 20 characters.
password	string	Password for the local user.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "description": "This is local user.",
  "full_name": "user name",
  "membership": [
    {
      "name": "SMB_SERVER01\\group",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
    }
  ],
  "name": "SMB_SERVER01\\user",
  "password": "string",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of local user records.
records	array[local_cifs_user]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "description": "This is local user.",
      "full_name": "user name",
      "membership": [
        {
          "name": "SMB_SERVER01\\group",
          "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
        }
      ],
      "name": "SMB_SERVER01\\user",
      "password": "string",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262278	Name and password are required fields.
655399	CIFS server must exist to create a local user.
655660	The operation is allowed only on data SVMs.

Error Code	Description
655661	The user name should not exceed 20 characters. Also full_name and description should not exceed 256 characters.
655665	The user name must not match the CIFS server name of the specified SVM.
655668	The specified user name contains illegal characters.
655675	The local domain name specified in user name doesn’t exist.
655682	The user name cannot be blank.
655733	The password does not meet the password complexity requirements.
655736	The specified user name already exists.
2621706	The specified SVM UUID is incorrect for the specified SVM name.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

membership

Name	Type	Description
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_user

Name	Type	Description
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.

Name	Type	Description
membership	array[membership]	Specifies local groups of which this local user is a member.
name	string	Local user name. The maximum supported length of an user name is 20 characters.
password	string	Password for the local user.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the local user configuration for an SVM

DELETE `/protocols/cifs/local-users/{svm.uuid}/{sid}`

Introduced In: 9.10

Deletes a local user configuration for the specified SVM.

Related ONTAP commands

- `vserver cifs users-and-groups local-user delete`

Learn more

- DOC /protocols/cifs/local-users

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local user SID
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655735	The local Administrator account cannot be deleted.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the local user information for a user and SVM

GET `/protocols/cifs/local-users/{svm.uuid}/{sid}`

Introduced In: 9.10

Retrieves local user information for the specified user and SVM.

Advanced properties

- `membership`

Related ONTAP commands

- `vserver cifs users-and-groups local-user show`
- `vserver cifs users-and-groups local-user show-membership`

Learn more

- DOC /protocols/cifs/local-users

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local user SID
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.
membership	array[membership]	Specifies local groups of which this local user is a member.

Name	Type	Description
name	string	Local user name. The maximum supported length of an user name is 20 characters.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "This is local user.",
  "full_name": "user name",
  "membership": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "SMB_SERVER01\\group",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
    }
  ],
  "name": "SMB_SERVER01\\user",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

membership

Name	Type	Description
_links	_links	
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the local user information for a user and SVM

PATCH `/protocols/cifs/local-users/{svm.uuid}/{sid}`

Introduced In: 9.10

Updates local user information for the specified user and SVM. The PATCH endpoint is also used to rename a user and to set the password for the user.

Related ONTAP commands

- `vserver cifs users-and-groups local-user modify`
- `vserver cifs users-and-groups local-user rename`
- `vserver cifs users-and-groups local-user set-password`

Learn more

- DOC /protocols/cifs/local-users

Parameters

Name	Type	In	Required	Description
sid	string	path	True	Local user SID
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.
membership	array[membership]	Specifies local groups of which this local user is a member.
name	string	Local user name. The maximum supported length of an user name is 20 characters.
password	string	Password for the local user.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "description": "This is local user.",
  "full_name": "user name",
  "membership": [
    {
      "name": "SMB_SERVER01\\group",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001"
    }
  ],
  "name": "SMB_SERVER01\\user",
  "password": "string",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655661	The user name should not exceed 20 characters. Also full_name and description should not exceed 256 characters.
655668	The specified user name contains illegal characters.
655675	The local domain name specified in the user name does not exist.
655682	The user name cannot be blank.
655732	Failed to rename a user. The error code returned details the failure along with the reason for the failure. Take corrective actions as per the specified reason.

Error Code	Description
655733	The specified password does not meet the password complexity requirements.
655737	To rename an existing user, the local domain specified in name must match the local domain of the user to be renamed.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

membership

Name	Type	Description
name	string	Local group name. The maximum supported length of a group name is 256 characters.
sid	string	The security ID of the local group which uniquely identifies the group. The group SID is automatically generated in POST and it is retrieved using the GET method.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_user

Name	Type	Description
account_disabled	boolean	Indicates whether the user account is enabled or disabled.
description	string	Description for the local user.
full_name	string	User's full name.

Name	Type	Description
membership	array[membership]	Specifies local groups of which this local user is a member.
name	string	Local user name. The maximum supported length of an user name is 20 characters.
password	string	Password for the local user.
sid	string	The security ID of the local user which uniquely identifies the user. The user SID is automatically generated in POST and it is retrieved using the GET method.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View NetBIOS information

Protocols CIFS netbios endpoint overview

Displays information about NBT connections for the cluster. Displays the IP address associated with the interfaces, the IP addresses of the WINS servers in use, and information about the registered NetBIOS names

for the cluster. You can use this command to troubleshoot NetBIOS name resolution problems.

Examples

Retrieving full CIFS NetBIOS information for all SVMs in the cluster

```
# The API:
GET /api/protocols/cifs/netbios

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/cifs/netbios?return_timeout=15&fields=*&return_records=t
rue" -H  "accept: application/json" -H  "authorization: Basic
YWRtaW46bmV0YXBwMSE="

# The response:
{
"records": [
  {
    "node": {
      "uuid": "c2179c2c-777f-11ec-95a1-1315568ef5fd",
      "name": "vsim2"
    },
    "svm": {
      "name": "vs1",
      "uuid": "99a3bd71-777f-11ec-95a1-1315568ef5fd"
    },
    "name": "CIFSERVER2",
    "interfaces": [
      "172.10.144.44"
    ],
    "wins_servers": [
      {
        "ip": "10.10.10.10",
        "state": "inactive"
      }
    ],
    "scope": "group",
    "mode": "h",
    "state": "broadcast",
    "time_left": 0,
    "name_registration_type": "",
    "suffix": "00"
  },
  {
```

```
    "node": {
      "uuid": "c2179c2c-777f-11ec-95a1-1315568ef5fd",
      "name": "vsim2"
    },
    "svm": {
      "name": "vs1",
      "uuid": "99a3bd71-777f-11ec-95a1-1315568ef5fd"
    },
    "name": "CIFSERVER2",
    "interfaces": [
      "172.10.144.44"
    ],
    "wins_servers": [
      {
        "ip": "10.10.10.10",
        "state": "inactive"
      }
    ],
    "scope": "",
    "mode": "h",
    "state": "broadcast",
    "time_left": 0,
    "name_registration_type": "group",
    "suffix": "20"
  }
],
"num_records": 2
}
```


Retrieving CIFS NetBIOS Information for a particular SVM

```
# The API:
GET /api/protocols/cifs/netbios

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/cifs/netbios?svm.uuid=45a3bd71-777f-11ec-95a1-
1315568ef5fd&return_timeout=15&fields=*&return_records=true" -H  "accept:
application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE="

# The response:
{
"records": [
  {
    "node": {
      "uuid": "c2179c2c-777f-11ec-95a1-1315568ef5fd",
      "name": "vsim2"
    },
    "svm": {
      "name": "vs1",
      "uuid": "45a3bd71-777f-11ec-95a1-1315568ef5fd"
    },
    "name": "CIFSERVER2",
    "interfaces": [
      "172.10.144.44"
    ],
    "wins_servers": [
      {
        "ip": "10.10.10.10",
        "state": "inactive"
      }
    ],
    "scope": "group",
    "mode": "h",
    "state": "broadcast",
    "time_left": 0,
    "name_registration_type": "",
    "suffix": "00"
  }
],
"num_records": 1
}
```

Retrieve NetBIOS information

GET `/protocols/cifs/netbios`

Introduced In: 9.11

Retrieves NetBIOS information.

Related ONTAP commands

- `vserver cifs nbtstat`

Learn more

- DOC /protocols/cifs/netbios

Parameters

Name	Type	In	Required	Description
mode	string	query	False	Filter by mode
wins_servers.state	string	query	False	Filter by wins_servers.state
wins_servers.ip	string	query	False	Filter by wins_servers.ip
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
interfaces	string	query	False	Filter by interfaces
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
suffix	string	query	False	Filter by suffix
name_registration_type	string	query	False	Filter by name_registration_type
state	string	query	False	Filter by state
scope	string	query	False	Filter by scope
name	string	query	False	Filter by name

Name	Type	In	Required	Description
time_left	integer	query	False	Filter by time_left
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of Records.
records	array[netbios]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "interfaces": [
        [
          "10.10.10.35"
        ]
      ],
      "mode": "string",
      "name": "CLUSTER_1",
      "name_registration_type": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scope": "string",
      "state": "string",
      "suffix": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "time_left": 0,
      "wins_servers": [
        {
```

```
            "ip": "10.224.65.20",
            "state": "string"
          }
        ]
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

server

Name	Type	Description
ip	string	Windows Internet Name Server (WINS) address which manages and maps the NetBIOS name of the CIFS server to their network IP addresses. The IP addresses are IPv4 addresses.
state	string	Specifies the state of the WINS server.

netbios

Name	Type	Description
interfaces	array[string]	
mode	string	Specifies the mode in which the NetBIOS name service is configured. The supported values are: • p - Point to Point • h - Hybrid • m - Mixed • b - Broadcast
name	string	Specifies the NetBIOS name.
name_registration_type	string	Specifies the name registration type.
node	node	
scope	string	Specifies the NetBIOS name scope. Scope is used as a name for the set of NetBIOS nodes that participate in a NetBIOS over TCP (NBT) virtual LAN.
state	string	Specifies the registration state of the NetBIOS Name.

Name	Type	Description
suffix	string	Specifies the NetBIOS suffix. A NetBIOS suffix is the 16th character of the 16-character NetBIOS name. The NetBIOS suffix is used by Microsoft Networking software to identify functionality installed on the registered device.
svm	svm	SVM, applies only to SVM-scoped objects.
time_left	integer	Specifies the registration time left with WINS, in minutes.
wins_servers	array[server]	List of WINS

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage CIFS services

Protocols CIFS services endpoint overview

Overview

A CIFS server is necessary to provide SMB clients with access to the Storage Virtual Machine (SVM). Before you begin, the following prerequisites must be in place:

- At least one SVM LIF must exist on the SVM.
- The LIFs must be able to connect to the DNS servers configured on the SVM and to an Active Directory domain controller of the domain to which you want to join the CIFS server.
- The DNS servers must contain the service location records that are needed to locate the Active Directory domain services.
- The cluster time must be synchronized to within five minutes of the Active Directory domain controller.

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Information on the CIFS server

You must keep the following in mind when creating the CIFS server:

- The CIFS server name might or might not be the same as the SVM name.
- The CIFS server name can be up to 15 characters in length.
- The following characters are not allowed: @ # * ( ) = + [ ] \| ; : " , < > \ / ?
- You must use the FQDN when specifying the domain.
- The default is to add the CIFS server machine account to the Active Directory "CN=Computer" object.
- You can choose to add the CIFS server to a different organizational unit (OU) by specifying the "organizational_unit" parameter. When specifying the OU, do not specify the domain portion of the distinguished name; only specify the OU or CN portion of the distinguished name. ONTAP appends the value provided for the required "-domain" parameter onto the value provided for the "-ou" parameter to create the Active Directory distinguished name, which is used when joining the Active Directory domain.
- You can optionally choose to add a text comment of up to 256 characters about the CIFS server. If there is a space in the comment text, you must enclose the entire string in quotation marks.
- You can optionally choose to add a comma-delimited list of one or more NetBIOS aliases for the CIFS server.
- The initial administrative status of the CIFS server is "up".
- The large-mtu and multichannel features are enabled for the new CIFS server.
- If LDAP is configured with the *use_start_tls* and *session_security* features, the new CIFS server will also have this property set.
- The security.kdc_encryption and security.advertised_kdc_encryptions fields are mutually exclusive. Use the advertised_kdc_encryptions field to specify the encryption types to be advertised to the Key Distribution Center (KDC) server in the Active Directory domain.

Examples

Creating a CIFS server

To create a CIFS server, use the following API. Note the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/cifs/services

# The call:
curl -X POST "https://<mgmt-
ip>/api/protocols/cifs/services?return_timeout=10&return_records=true" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H "Content-Type: application/json" -d "{ \"ad_domain\": { \"fqdn\":
\"ontapavc.com\", \"organizational_unit\": \"CN=Computers\", \"password\":
\"cifs*123\", \"user\": \"administrator\" }, \"comment\": \"This CIFS
Server Belongs to CS Department\", \"default_unix_user\": \"string\",
\"enabled\": true, \"name\": \"CIFS1\", \"netbios\": { \"aliases\": [
\"ALIAS_1\", \"ALIAS_2\", \"ALIAS_3\" ], \"enabled\": false,
\"wins_servers\": [ \"10.224.65.20\", \"10.224.65.21\" ] }, \"options\": {
\"admin_to_root_mapping\": true, \"advanced_sparse_file\": true,
\"copy_offload\": true, \"fake_open\": true, \"fsctl_trim\": true,
\"junction_reparse\": true, \"large_mtu\": true, \"multichannel\": true,
\"null_user_windows_name\": \"string\", \"path_component_cache\": true,
\"referral\": false, \"smb_credits\": 128, \"widelink_reparse_versions\":
[ \"smb1\" ] }, \"security\": { \"encrypt_dc_connection\": false,
\"kdc_encryption\": false, \"restrict_anonymous\": \"no_enumeration\",
\"session_security\": \"none\", \"smb_encryption\": false,
\"smb_signing\": false, \"use_ldaps\": false, \"use_start_tls\": false },
\"svm\": { \"name\": \"vs1\", \"uuid\": \"e0c20d9c-96cd-11eb-97da-
0050568e684d\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "e0c20d9c-96cd-11eb-97da-0050568e684d",
      "name": "vs1"
    },
    "name": "CIFS1",
    "ad_domain": {
      "fqdn": "ONTAPAVC.COM",
      "organizational_unit": "CN=Computers"
    },
    "enabled": true,
    "comment": "This CIFS Server Belongs to CS Department",
    "security": {
      "restrict_anonymous": "no_enumeration",
      "smb_signing": false,
```

```
      "smb_encryption": false,
      "kdc_encryption": false,
      "aes_netlogon_enabled": false,
      "try_ldap_channel_binding": false,
      "referral_enabled": false,
      "lm_compatibility_level": "lm_ntlm_ntlmv2_krb",
      "encrypt_dc_connection": false,
      "use_start_tls": false,
      "session_security": "none",
      "use_ldaps": false
    },
    "netbios": {
      "aliases": [
        "ALIAS_1",
        "ALIAS_2",
        "ALIAS_3"
      ],
      "wins_servers": [
        "10.224.65.20",
        "10.224.65.21"
      ],
      "enabled": false
    },
    "default_unix_user": "string",
    "options": {
      "advanced_sparse_file": true,
      "referral": false,
      "widelink_reparse_versions": [
        "smb1"
      ],
      "multichannel": true,
      "path_component_cache": true,
      "null_user_windows_name": "string",
      "junction_reparse": true,
      "fsctl_trim": true,
      "large_mtu": true,
      "fake_open": true,
      "smb_credits": 128,
      "admin_to_root_mapping": true,
      "copy_offload": true
    }
  }
],
"job": {
  "uuid": "825a0b4b-9703-11eb-8cc1-0050568e684d",
  "_links": {
```

```
    "self": {
      "href": "/api/cluster/jobs/825a0b4b-9703-11eb-8cc1-0050568e684d"
    }
  }
}
}
```

Creating a CIFS server when using AKV

```
# The API:
POST /api/protocols/cifs/services

# The call:
curl -X POST "https://<mgmt-
ip>/api/protocols/cifs/services?return_timeout=10&return_records=true" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H "Content-Type: application/json" -d "{ \"key_vault_uri\":
\"https://testkv.vault.azure.net\", \"client_secret\":
\"_8E8Q~Qu866jtihUE3ia4Q5Y5IDEVC6UfskbZa6X\", \"authentication_method\":
\"client_secret\", \"tenant_id\": \"c9f32fcb-4ab7-40fe-af1b-
1850d46cfbbe\", \"client_id\": \"e959d1b5-5a63-4284-9268-851e30e3eceb\",
\"ad_domain\": { \"fqdn\": \"ontapavc.com\", \"organizational_unit\":
\"CN=Computers\", \"user\": \"administrator\" }, \"comment\": \"This CIFS
Server Belongs to CS Department\", \"default_unix_user\": \"string\",
\"enabled\": true, \"name\": \"CIFS1\", \"netbios\": { \"aliases\": [
\"ALIAS_1\", \"ALIAS_2\", \"ALIAS_3\" ], \"enabled\": false,
\"wins_servers\": [ \"10.224.65.20\", \"10.224.65.21\" ] }, \"options\": {
\"admin_to_root_mapping\": true, \"advanced_sparse_file\": true,
\"copy_offload\": true, \"fake_open\": true, \"fsctl_trim\": true,
\"junction_reparse\": true, \"large_mtu\": true, \"multichannel\": true,
\"null_user_windows_name\": \"string\", \"path_component_cache\": true,
\"referral\": false, \"smb_credits\": 128, \"widelink_reparse_versions\":
[ \"smb1\" ] }, \"security\": { \"encrypt_dc_connection\": false,
\"kdc_encryption\": false, \"restrict_anonymous\": \"no_enumeration\",
\"session_security\": \"none\", \"smb_encryption\": false,
\"smb_signing\": false, \"use_ldaps\": false, \"use_start_tls\": false },
\"svm\": { \"name\": \"vs1\", \"uuid\": \"e0c20d9c-96cd-11eb-97da-
0050568e684d\" }}"

# The response:
{
"num_records": 1,
```

```
"records": [
  {
    "svm": {
      "uuid": "e0c20d9c-96cd-11eb-97da-0050568e684d",
      "name": "vs1"
    },
    "name": "CIFS1",
    "ad_domain": {
      "fqdn": "ONTAPAVC.COM",
      "organizational_unit": "CN=Computers"
    },
    "enabled": true,
    "comment": "This CIFS Server Belongs to CS Department",
    "security": {
      "restrict_anonymous": "no_enumeration",
      "smb_signing": false,
      "smb_encryption": false,
      "kdc_encryption": false,
      "aes_netlogon_enabled": false,
      "try_ldap_channel_binding": false,
      "referral_enabled": false,
      "lm_compatibility_level": "lm_ntlm_ntlmv2_krb",
      "encrypt_dc_connection": false,
      "use_start_tls": false,
      "session_security": "none",
      "use_ldaps": false
    },
    "netbios": {
      "aliases": [
        "ALIAS_1",
        "ALIAS_2",
        "ALIAS_3"
      ],
      "wins_servers": [
        "10.224.65.20",
        "10.224.65.21"
      ],
      "enabled": false
    },
    "default_unix_user": "string",
    "options": {
      "advanced_sparse_file": true,
      "referral": false,
      "widelink_reparse_versions": [
        "smb1"
      ],
```

```
      "multichannel": true,
      "path_component_cache": true,
      "null_user_windows_name": "string",
      "junction_reparse": true,
      "fsctl_trim": true,
      "large_mtu": true,
      "fake_open": true,
      "smb_credits": 128,
      "admin_to_root_mapping": true,
      "copy_offload": true
    }
  }
],
"job": {
  "uuid": "825a0b4b-9703-11eb-8cc1-0050568e684d",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/825a0b4b-9703-11eb-8cc1-0050568e684d"
    }
  }
}
}
```


Creating a CIFS server for Hybrid user

```
# The API:
POST /api/protocols/cifs/services

# The call:
curl -X POST "https://<mgmt-
ip>/api/protocols/cifs/services?return_timeout=10&return_records=true" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H "Content-Type: application/json" -d "{ \"auth_user_type\":
\"hybrid_user\", \"client_certificate\": \"certificate added to azure
application\", \"authentication_method\": \"certificate\", \"tenant_id\":
\"c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe\", \"client_id\": \"e959d1b5-5a63-
4284-9268-851e30e3eceb\", \"ad_domain\": { \"fqdn\": \"ontapavc.com\",
\"organizational_unit\": \"CN=Computers\" }, \"comment\": \"This CIFS
Server Belongs to CS Department\", \"enabled\": true, \"name\": \"CIFS1\",
\"svm\": { \"name\": \"vs1\", \"uuid\": \"e0c20d9c-96cd-11eb-97da-
0050568e684d\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "e0c20d9c-96cd-11eb-97da-0050568e684d",
      "name": "vs1"
    },
    "name": "CIFS1",
    "ad_domain": {
      "fqdn": "ONTAPAVC.COM",
      "organizational_unit": "CN=Computers"
    },
    "enabled": true,
    "comment": "This CIFS Server Belongs to CS Department",
  }
],
"job": {
  "uuid": "825a0b4b-9703-11eb-8cc1-0050568e684d",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/825a0b4b-9703-11eb-8cc1-0050568e684d"
    }
  }
}
}
```

Creating a CIFS server when using the security.advertised_kdc_encryptions field

```
# The API:
POST /api/protocols/cifs/services

# The call:
curl -X POST "https://<mgmt-
ip>/api/protocols/cifs/services?return_timeout=120&return_records=true&for
ce=true" -H "accept: application/json" -H "authorization: Basic
YWRtaW46bmV0YXBwMSE=" -H "Content-Type: application/json" -d "{
\"ad_domain\": { \"fqdn\": \"testdomain.com\", \"organizational_unit\":
\"CN=Computers\", \"password\": \"cifs*123\", \"user\": \"administrator\"
}, \"enabled\": true, \"name\": \"CIFS_server1\", \"security\": {
\"advertised_kdc_encryptions\": [ \"aes-128\" ] }, \"svm\": { \"name\":
\"testvs\", \"uuid\": \"508375d4-fb16-11ee-a792-005056a75b5c\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "508375d4-fb16-11ee-a792-005056a75b5c",
      "name": "testvs"
    },
    "name": "CIFS_SERVER1",
    "domain_workgroup": "TESTDOMAIN",
    "ad_domain": {
      "fqdn": "TESTDOMAIN.COM",
      "organizational_unit": "CN=Computers",
      "default_site": ""
    },
    "enabled": true,
    "comment": "",
    "security": {
      "restrict_anonymous": "no_enumeration",
      "smb_signing": false,
      "smb_encryption": false,
      "kdc_encryption": true,
      "lm_compatibility_level": "lm_ntlm_ntlmv2_krb",
      "aes_netlogon_enabled": false,
      "try_ldap_channel_binding": true,
      "ldap_referral_enabled": false,
      "advertised_kdc_encryptions": [
```

```
        "aes_128"
      ],
      "encrypt_dc_connection": false,
      "use_start_tls": false,
      "session_security": "none",
      "use_ldaps": false
    },
    "netbios": {
      "wins_servers": [],
      "enabled": false
    },
    "default_unix_user": "pcuser",
    "statistics": {
      "timestamp": "2024-04-16T15:17:41Z",
      "status": "ok",
      "throughput_raw": {
        "read": 0,
        "write": 0,
        "total": 0
      },
      "iops_raw": {
        "read": 0,
        "write": 0,
        "other": 0,
        "total": 0
      },
      "latency_raw": {
        "read": 0,
        "write": 0,
        "other": 0,
        "total": 0
      }
    },
    "options": {
      "advanced_sparse_file": true,
      "referral": false,
      "widelink_reparse_versions": [
        "smb1"
      ],
      "multichannel": true,
      "path_component_cache": true,
      "junction_reparse": true,
      "fsctl_trim": true,
      "large_mtu": true,
      "fake_open": true,
      "smb_credits": 512,
```

```
      "admin_to_root_mapping": true,
      "copy_offload": true,
      "shadowcopy": true,
      "shadowcopy_dir_depth": 5,
      "export_policy_enabled": false
    },
    "group_policy_object_enabled": false
  }
],
"job": {
  "uuid": "73eec230-fc04-11ee-a792-005056a75b5c",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/73eec230-fc04-11ee-a792-005056a75b5c"
    }
  }
}
}
```


Retrieving the full CIFS server configuration for all SVMs in the cluster

```
# The API:
GET /api/protocols/cifs/services

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/cifs/services?fields=*&return_records=true&return_timeou
t=15" -H "accept: application/json" -H "authorization: Basic
YWRtaW46bmV0YXBwMSE="

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "e0c20d9c-96cd-11eb-97da-0050568e684d",
      "name": "vs1"
    },
    "name": "CIFS1",
    "ad_domain": {
      "fqdn": "ONTAPAVC.COM",
      "organizational_unit": "CN=Computers"
```

```
    },
    "enabled": true,
    "comment": "This CIFS Server Belongs to CS Department",
    "security": {
      "restrict_anonymous": "no_enumeration",
      "smb_signing": false,
      "smb_encryption": false,
      "kdc_encryption": false,
      "aes_netlogon_enabled": false,
      "try_ldap_channel_binding": false,
      "referral_enabled": false,
      "lm_compatibility_level": "lm_ntlm_ntlmv2_krb",
      "encrypt_dc_connection": false,
      "use_start_tls": false,
      "session_security": "none",
      "use_ldaps": false
    },
    "netbios": {
      "aliases": [
        "ALIAS_1",
        "ALIAS_2",
        "ALIAS_3"
      ],
      "wins_servers": [
        "10.224.65.20",
        "10.224.65.21"
      ],
      "enabled": false
    },
    "default_unix_user": "string",
    "options": {
      "advanced_sparse_file": true,
      "referral": false,
      "widelink_reparse_versions": [
        "smb1"
      ],
      "multichannel": true,
      "path_component_cache": true,
      "null_user_windows_name": "string",
      "junction_reparse": true,
      "fsctl_trim": true,
      "large_mtu": true,
      "fake_open": true,
      "smb_credits": 128,
      "admin_to_root_mapping": true,
      "copy_offload": true
```

```
    }
  }
],
"num_records": 1
}
```

Retrieving CIFS server configuration details for a specific SVM

```
# The API:
GET /api/protocols/cifs/services/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/services/e0c20d9c-96cd-
11eb-97da-0050568e684d" -H "accept: application/json" -H "authorization:
Basic YWRtaW46bmV0YXBwMSE="

# The response:
{
"svm": {
  "uuid": "e0c20d9c-96cd-11eb-97da-0050568e684d",
  "name": "vs1"
},
"name": "CIFS1",
"ad_domain": {
  "fqdn": "ONTAPAVC.COM",
  "organizational_unit": "CN=Computers"
},
"enabled": true,
"comment": "This CIFS Server Belongs to CS Department",
"security": {
  "restrict_anonymous": "no_enumeration",
  "smb_signing": false,
  "smb_encryption": false,
  "kdc_encryption": false,
  "aes_netlogon_enabled": false,
  "try_ldap_channel_binding": false,
  "referral_enabled": false,
  "lm_compatibility_level": "lm_ntlm_ntlmv2_krb",
  "encrypt_dc_connection": false,
  "use_start_tls": false,
  "session_security": "none",
  "use_ldaps": false
```

```
},
"netbios": {
  "aliases": [
    "ALIAS_1",
    "ALIAS_2",
    "ALIAS_3"
  ],
  "wins_servers": [
    "10.224.65.20",
    "10.224.65.21"
  ],
  "enabled": false
},
"default_unix_user": "string",
"options": {
  "advanced_sparse_file": true,
  "referral": false,
  "widelink_reparse_versions": [
    "smb1"
  ],
  "multichannel": true,
  "path_component_cache": true,
  "null_user_windows_name": "string",
  "junction_reparse": true,
  "fsctl_trim": true,
  "large_mtu": true,
  "fake_open": true,
  "smb_credits": 128,
  "admin_to_root_mapping": true,
  "copy_offload": true
}
}
```


Updating CIFS server properties for the specified SVM

```
# The API:
PATCH /api/protocols/cifs/services/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/services/e0c20d9c-
96cd-11eb-97da-0050568e684d" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"comment\": \"CIFS SERVER MODIFICATION\"}"
```

Removing a CIFS server for a specific SVM

To delete a CIFS server, use the following API. This will delete the CIFS server along with other CIFS configurations such as CIFS share, share ACLs, homedir search-path, and so on.

```
# The API:
DELETE /api/protocols/cifs/services/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/services/e0c20d9c-
96cd-11eb-97da-0050568e684d" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"ad_domain\": { \"fqdn\": \"ontapavc.com\",
\"organizational_unit\": \"CN=Computers\", \"password\": \"cifs*123\",
\"user\": \"administrator\" }, \"force\": true}"

# The call when using AKV:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/services/e0c20d9c-
96cd-11eb-97da-0050568e684d" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"key_vault_uri\":
\"https://testkv.vault.azure.net\", \"client_secret\":
\"_8E8Q~Qu866jtihUE3ia4Q5Y5IDEVC6UfskbZa6X\", \"authentication_method\":
\"client_secret\", \"tenant_id\": \"c9f32fcb-4ab7-40fe-af1b-
1850d46cfbbe\", \"client_id\": \"e959d1b5-5a63-4284-9268-851e30e3eceb\",
\"ad_domain\": { \"fqdn\": \"ontapavc.com\", \"organizational_unit\":
\"CN=Computers\" , \"user\": \"administrator\" }, \"force\": true}"

# The call when using EntraId:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/services/e0c20d9c-
96cd-11eb-97da-0050568e684d" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"auth_user_type\": \"hybrid-user\",
\"client_certificate\": \"client_certificate_added_to_azure_application\",
\"authentication_method\": \"certificate\", \"tenant_id\": \"c9f32fcb-
4ab7-40fe-af1b-1850d46cfbbe\", \"client_id\": \"e959d1b5-5a63-4284-9268-
851e30e3eceb\", \"ad_domain\": { \"fqdn\": \"ontapavc.com\",
\"organizational_unit\": \"CN=Computers\"}, \"force\": true}"
```

Retrieve CIFS servers

GET `/protocols/cifs/services`

Introduced In: 9.6

Retrieves CIFS servers.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default

in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver cifs server show`
- `vserver cifs server options show`
- `vserver cifs server security show`

Learn more

- DOC /protocols/cifs/services

Parameters

Name	Type	In	Required	Description
auth_user_type	string	query	False	Filter by auth_user_type • Introduced in: 9.16
ad_domain.organizational_unit	string	query	False	Filter by ad_domain.organizational_unit
ad_domain.default_site	string	query	False	Filter by ad_domain.default_site • Introduced in: 9.13
ad_domain.fqdn	string	query	False	Filter by ad_domain.fqdn
authentication_method	string	query	False	Filter by authentication_method • Introduced in: 9.15
netbios.enabled	boolean	query	False	Filter by netbios.enabled

Name	Type	In	Required	Description
netbios.wins_servers	string	query	False	Filter by netbios.wins_servers
netbios.aliases	string	query	False	Filter by netbios.aliases • maxLength: 15 • minLength: 1
proxy_host	string	query	False	Filter by proxy_host • Introduced in: 9.15
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
auth-style	string	query	False	Filter by auth-style • Introduced in: 9.15
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7
options.path_component_cache	boolean	query	False	Filter by options.path_component_cache • Introduced in: 9.10
options.shadowcopy	boolean	query	False	Filter by options.shadowcopy • Introduced in: 9.11
options.max_lifs_per_session	integer	query	False	Filter by options.max_lifs_per_session • Introduced in: 9.16 • Max value: 256 • Min value: 1

Name	Type	In	Required	Description
options.max_connections_per_session	integer	query	False	Filter by options.max_connections_per_session • Introduced in: 9.16 • Max value: 1024 • Min value: 2
options.fsctl_trim	boolean	query	False	Filter by options.fsctl_trim • Introduced in: 9.10
options.trusted_domain_enum_search_enabled	boolean	query	False	Filter by options.trusted_domain_enum_search_enabled • Introduced in: 9.16
options.max_opens_same_file_per_tree	integer	query	False	Filter by options.max_opens_same_file_per_tree • Introduced in: 9.16
options.smb_credits	integer	query	False	Filter by options.smb_credits • Introduced in: 9.10 • Max value: 8192 • Min value: 2
options.shadowcopy_dir_depth	integer	query	False	Filter by options.shadowcopy_dir_depth • Introduced in: 9.11

Name	Type	In	Required	Description
options.null_user_windows_name	string	query	False	Filter by options.null_user_windows_name • Introduced in: 9.10
options.backup_symlink_enabled	boolean	query	False	Filter by options.backup_symlink_enabled • Introduced in: 9.15
options.copy_offload	boolean	query	False	Filter by options.copy_offload • Introduced in: 9.10
options.widelink_reparse_versions	string	query	False	Filter by options.widelink_reparse_versions • Introduced in: 9.10
options.admin_to_root_mapping	boolean	query	False	Filter by options.admin_to_root_mapping • Introduced in: 9.10
options.dac_enabled	boolean	query	False	Filter by options.dac_enabled • Introduced in: 9.15
options.large_mtu	boolean	query	False	Filter by options.large_mtu • Introduced in: 9.10

Name	Type	In	Required	Description
options.max_same_tree_connect_per_session	integer	query	False	Filter by options.max_same_tree_connect_per_session • Introduced in: 9.16
options.max_watches_set_per_tree	integer	query	False	Filter by options.max_watches_set_per_tree • Introduced in: 9.16
options.advanced_sparse_file	boolean	query	False	Filter by options.advanced_sparse_file • Introduced in: 9.10
options.max_same_user_sessions_per_connection	integer	query	False	Filter by options.max_same_user_sessions_per_connection • Introduced in: 9.16
options.client_dup_detection_enabled	boolean	query	False	Filter by options.client_dup_detection_enabled • Introduced in: 9.16
options.referral	boolean	query	False	Filter by options.referral • Introduced in: 9.10
options.export_policy_enabled	boolean	query	False	Filter by options.export_policy_enabled • Introduced in: 9.13

Name	Type	In	Required	Description
options.client_version_reporting_enabled	boolean	query	False	Filter by options.client_version_reporting_enabled • Introduced in: 9.16
options.junction_reparse	boolean	query	False	Filter by options.junction_reparse • Introduced in: 9.10
options.fake_open	boolean	query	False	Filter by options.fake_open • Introduced in: 9.10
options.multichannel	boolean	query	False	Filter by options.multichannel • Introduced in: 9.10
client_id	string	query	False	Filter by client_id • Introduced in: 9.15
name	string	query	False	Filter by name • maxLength: 15 • minLength: 1
default_unix_user	string	query	False	Filter by default_unix_user
proxy_port	integer	query	False	Filter by proxy_port • Introduced in: 9.15

Name	Type	In	Required	Description
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
key_vault_uri	string	query	False	Filter by key_vault_uri • Introduced in: 9.15

Name	Type	In	Required	Description
proxy_username	string	query	False	Filter by proxy_username • Introduced in: 9.15
proxy_type	string	query	False	Filter by proxy_type • Introduced in: 9.15
security.session_security	string	query	False	Filter by security.session_security • Introduced in: 9.10
security.smb_signing	boolean	query	False	Filter by security.smb_signing
security.smb_encryption	boolean	query	False	Filter by security.smb_encryption
security.restrict_anonymous	string	query	False	Filter by security.restrict_anonymous
security.try_ldap_channel_binding	boolean	query	False	Filter by security.try_ldap_channel_binding • Introduced in: 9.10
security.kdc_encryption	boolean	query	False	Filter by security.kdc_encryption
security.ldap_referral_enabled	boolean	query	False	Filter by security.ldap_referral_enabled • Introduced in: 9.10

Name	Type	In	Required	Description
security.lm_compatibility_level	string	query	False	Filter by security.lm_compatibility_level • Introduced in: 9.8
security.advertised_kdc_encryptions	string	query	False	Filter by security.advertised_kdc_encryptions • Introduced in: 9.12
security.use_ldaps	boolean	query	False	Filter by security.use_ldaps • Introduced in: 9.10
security.encrypt_dc_connection	boolean	query	False	Filter by security.encrypt_dc_connection • Introduced in: 9.8
security.use_start_tls	boolean	query	False	Filter by security.use_start_tls • Introduced in: 9.10
security.aes_netlogon_enabled	boolean	query	False	Filter by security.aes_netlogon_enabled • Introduced in: 9.10
verify_host	boolean	query	False	Filter by verify_host • Introduced in: 9.15

Name	Type	In	Required	Description
workgroup	string	query	False	Filter by workgroup • Introduced in: 9.15 • maxLength: 15 • minLength: 1
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
tenant_id	string	query	False	Filter by tenant_id • Introduced in: 9.15
group_policy_object_enabled	boolean	query	False	Filter by group_policy_object_enabled • Introduced in: 9.12
oauth_host	string	query	False	Filter by oauth_host • Introduced in: 9.15
timeout	integer	query	False	Filter by timeout • Introduced in: 9.15
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ad_domain": {
        "default_site": "string",
        "fqdn": "example.com",
        "organizational_unit": "string"
      },
      "auth-style": "domain",
      "auth_user_type": "string",
      "authentication_method": "string",
      "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
      "comment": "This CIFS Server Belongs to CS Department",
      "default_unix_user": "string",
      "key_vault_uri": "https://kmip-akv-keyvault.vault.azure.net/",
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
```

```
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "CIFS1",
      "netbios": {
        "aliases": [
          "ALIAS_1",
          "ALIAS_2",
          "ALIAS_3"
        ],
        "wins_servers": [
          "10.224.65.20",
          "10.224.65.21"
        ]
      },
      "oauth_host": "login.microsoftonline.com",
      "options": {
        "max_connections_per_session": 32,
        "max_lifs_per_session": 256,
        "max_opens_same_file_per_tree": 1000,
        "max_same_tree_connect_per_session": 5000,
        "max_same_user_sessions_per_connection": 2500,
        "max_watches_set_per_tree": 500,
        "null_user_windows_name": "string",
        "smb_credits": 128,
        "widelink_reparse_versions": [
          "smb1"
        ]
      },
      "proxy_host": "proxy.eng.com",
      "proxy_port": 1234,
      "proxy_type": "string",
      "proxy_username": "proxyuser",
      "security": {
        "advertised_kdc_encryptions": [
          "string"
        ],
        "lm_compatibility_level": "string",
        "restrict_anonymous": "string",
```

```
        "session_security": "string"
      },
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
      "timeout": 25,
      "workgroup": "workgrp1"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store. POST and PATCH only.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server. POST and PATCH only.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

cifs_netbios

Name	Type	Description
aliases	array[string]	
enabled	boolean	Specifies whether NetBios name service (NBNS) is enabled for the CIFS. If this service is enabled, the CIFS server will start sending the broadcast for name registration.
wins_servers	array[string]	

cifs_service_options

Name	Type	Description
admin_to_root_mapping	boolean	Specifies whether or not Administrator can be mapped to the UNIX user "root".
advanced_sparse_file	boolean	Specifies whether or not the CIFS server supports the advanced sparse file capabilities. This allows CIFS clients to query the allocated ranges of a file and to write zeroes or free data blocks for ranges of a file.
backup_symlink_enabled	boolean	Specifies whether or not to preserve UNIX symlinks during backup through SMB.
client_dup_detection_enabled	boolean	Specifies whether or not client duplicate session detection is enabled for CIFS.

Name	Type	Description
client_version_reporting_enabled	boolean	Specifies whether or not client version reporting is enabled for CIFS.
copy_offload	boolean	Specifies whether or not to enable the Copy Offload feature. This feature enables direct data transfers within or between compatible storage devices without transferring the data through the host computer. Note that this will also enable/disable the direct copy feature accordingly.
dac_enabled	boolean	Specifies whether or not the Dynamic Access Control (DAC) feature is enabled for the CIFS server.
export_policy_enabled	boolean	Specifies whether or not export policies are enabled for CIFS.
fake_open	boolean	Specifies whether or not fake open support is enabled. This parameter allows you to optimize the open and close requests coming from SMB 2 clients.
fsctl_trim	boolean	Specifies whether or not the trim requests (FSCTL_FILE_LEVEL_TRIM) are supported on the CIFS server.
junction_reparse	boolean	Specifies whether or not the reparse point support is enabled. When enabled the CIFS server exposes junction points to Windows clients as reparse points. This parameter is only active if the client has negotiated use of the SMB 2 or SMB 3 protocol. This parameter is not supported for SVMs with Infinite Volume.

Name	Type	Description
large_mtu	boolean	Specifies whether or not SMB clients can send reads up to 1 MB in size.
max_connections_per_session	integer	Specifies the maximum number of connections allowed per multichannel session.
max_lifs_per_session	integer	Specifies the maximum number of LIFs advertised per multichannel session.
max_opens_same_file_per_tree	integer	Specifies the maximum number of opens on the same file per tree.
max_same_tree_connect_per_session	integer	Specifies the maximum number of same tree connections per session.
max_same_user_sessions_per_connection	integer	Specifies the maximum number of same user sessions per connection.
max_watches_set_per_tree	integer	Specifies the maximum number of watches set per tree.
multichannel	boolean	Specifies whether or not the CIFS server supports Multichannel.
null_user_windows_name	string	Specifies a Windows User or Group name that should be mapped in case of a NULL user value.
path_component_cache	boolean	Specifies whether or not the path component cache is enabled on the CIFS server.
referral	boolean	Specifies whether or not to refer clients to more optimal LIFs. When enabled, it automatically refers clients to a data LIF local to the node which hosts the root of the requested share.

Name	Type	Description
shadowcopy	boolean	Specifies whether or not to enable the Shadowcopy Feature. This feature enables to take share-based backup copies of data that is in a data-consistent state at a specific point in time where the data is accessed over SMB 3.0 shares.
shadowcopy_dir_depth	integer	Specifies the maximum level of subdirectories on which ONTAP should create shadow copies. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
smb_credits	integer	Specifies the maximum number of outstanding requests on a CIFS connection.
trusted_domain_enum_search_enabled	boolean	Specifies whether or not to enable trusted domain search. • If this parameter is set to true, it displays CIFS options only for CIFS servers that support enumeration of bidirectional trusted domains and that support searching in all bidirectional trusted domains when performing Windows user lookups for UNIX user to Windows user name mapping. • If set to false, it displays CIFS options for CIFS servers that do not support enumeration of bidirectional trusted domains.
widelink_reparse_versions	array[string]	Specifies the CIFS protocol versions for which the widelink is reported as reparse point.

cifs_service_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	
aes_netlogon_enabled	boolean	Specifies whether or not an AES session key is enabled for the Netlogon channel.
encrypt_dc_connection	boolean	Specifies whether encryption is required for domain controller connections.

Name	Type	Description
kdc_encryption	boolean	This attribute has been deprecated. Use "security.advertised_kdc_encryptions" to specify the encryption type to use. Specifies whether AES-128 and AES-256 encryption is enabled for all Kerberos-based communication with the Active Directory KDC. To take advantage of the strongest security with Kerberos-based communication, AES-256 and AES-128 encryption can be enabled on the CIFS server. Kerberos-related communication for CIFS is used during CIFS server creation on the SVM, as well as during the SMB session setup phase. The CIFS server supports the following encryption types for Kerberos communication: • RC4-HMAC • DES • AES When the CIFS server is created, the domain controller creates a computer machine account in Active Directory. After a newly created machine account authenticates, the KDC and the CIFS server negotiates encryption types. At this time, the KDC becomes aware of the

Name	Type	Description
ldap_referral_enabled	boolean	Specifies whether or not LDAP referral chasing is enabled for AD LDAP connections.
lm_compatibility_level	string	It is CIFS server minimum security level, also known as the LMCompatibilityLevel. The minimum security level is the minimum level of the security tokens that the CIFS server accepts from SMB clients. The available values are: • lm_ntlm_ntlmv2_krb Accepts LM, NTLM, NTLMv2 and Kerberos • ntlm_ntlmv2_krb Accepts NTLM, NTLMv2 and Kerberos • ntlmv2_krb Accepts NTLMv2 and Kerberos • krb Accepts Kerberos only
restrict_anonymous	string	Specifies what level of access an anonymous user is granted. An anonymous user (also known as a "null user") can list or enumerate certain types of system information from Windows hosts on the network, including user names and details, account policies, and share names. Access for the anonymous user can be controlled by specifying one of three access restriction settings. The available values are: • no_restriction - No access restriction for an anonymous user. • no_enumeration - Enumeration is restricted for an anonymous user. • no_access - All access is restricted for an anonymous user.

Name	Type	Description
session_security	string	Specifies client session security for AD LDAP connections. The available values are: • none - No Signing or Sealing. • sign - Sign LDAP traffic. • seal - Seal and Sign LDAP traffic
smb_encryption	boolean	Specifies whether encryption is required for incoming CIFS traffic.
smb_signing	boolean	Specifies whether signing is required for incoming CIFS traffic. SMB signing helps to ensure that network traffic between the CIFS server and the client is not compromised.
try_ldap_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_ldaps	boolean	Specifies whether or not to use use LDAPS for secure Active Directory LDAP connections by using the TLS/SSL protocols.
use_start_tls	boolean	Specifies whether or not to use SSL/TLS for allowing secure LDAP communication with Active Directory LDAP servers.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_service

Name	Type	Description
_links	_links	
ad_domain	ad_domain	
auth-style	string	Authentication type.
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate

Name	Type	Description
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.
enabled	boolean	Specifies if the CIFS service is administratively enabled.
group_policy_object_enabled	boolean	If set to true, group policies will be applied to the SVM.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.

Name	Type	Description
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a CIFS server

POST `/protocols/cifs/services`

Introduced In: 9.6

Creates a CIFS server. Each SVM can have one CIFS server.

Important notes

- The CIFS server name might or might not be the same as the SVM name.
- The CIFS server name can contain up to 15 characters.
- The CIFS server name does not support the following characters: @ # * ( ) = + [ ] \| ; : " , < > / ?

Required properties when creating CIFS server with Windows Active Directory domain

- `svm.uuid` or `svm.name` - Existing SVM in which to create the CIFS server.
- `name` - Name of the CIFS server.
- `ad_domain.fqdn` - Fully qualified domain name of the Windows Active Directory to which this CIFS server belongs.
- `ad_domain.user` - User account with the access to add the CIFS server to the Active Directory.
- `ad_domain.password` - Account password used to add this CIFS server to the Active Directory.

Required properties when creating CIFS server in Workgroup mode

- `svm.uuid` or `svm.name` - Existing SVM in which to create the CIFS server.
- `name` - Name of the CIFS server.
- `workgroup` - Name of the workgroup to which this CIFS server belongs.

Required properties when using AKV for authentication (ANF platform)

- `svm.uuid` or `svm.name` - Existing SVM in which to create the CIFS server.
- `name` - Name of the CIFS server.
- `ad_domain.user` - User account with the access to add the CIFS server to the Active Directory.
- `ad_domain.fqdn` - Fully qualified domain name of the Windows Active Directory to which this CIFS server belongs.

- `client_id` - Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
- `tenant_id` - Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
- `key_vault_uri` - URI of the deployed AKV that is used by ONTAP for storing keys.
- `authentication_method` - Authentication method used by the application to prove its identity to AKV or EntraId. It can be either "client_secret" or "certificate".
- `auth_user_type` - Type of user who can access the SMB Volume. It can be either "domain_user" or "hybrid_user". The default is domain_user. In the case of a hybrid-user, ONTAP cannot access on-premise ADDS.
- `client_secret` - Secret used by the application to prove its identity to AKV.
- `client_certificate` - Base64 encoded PKCS12 certificate used by the application to prove its identity to AKV.

Recommended optional properties

- `comment` - Add a text comment of up to 256 characters about the CIFS server.
- `netbios.aliases` - Add a comma-delimited list of one or more NetBIOS aliases for the CIFS server.
- `netbios.wins_servers` - Add a list of Windows Internet Name Server (WINS) addresses that manage and map the NetBIOS name of the CIFS server to their network IP addresses. The IP addresses must be IPv4 addresses.

Default property values

If not specified in POST, the following default property values are assigned:

- `ad_domain.organizational_unit` - *CN=Computers*
- `enabled` - *true*
- `security.restrict_anonymous` - *no_enumeration*
- `security.smb_signing` - *false*
- `security.smb_encryption` - *false*
- `security.encrypt_dc_connection` - *false*
- `default_unix_user` - *pcuser*
- `netbios.enabled` - *false* However, if either "netbios.wins-server" or "netbios.aliases" is set during POST and if `netbios.enabled` is not specified then `netbios.enabled` is set to true.
- `security.aes_netlogon_enabled` - *false*
- `security.try_ldap_channel_binding` - *true*
- `security.ldap_referral_enabled` - *false*

Related ONTAP commands

- `vserver cifs server create`
- `vserver cifs server options modify`

- `vserver cifs security modify`
- `vserver cifs server add-netbios-aliases`

Learn more

- DOC /protocols/cifs/services

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	If this is set and a machine account with the same name as specified in 'cifs-server name' exists in the Active Directory, existing machine account will be overwritten and reused. • Introduced in: 9.11

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ad_domain	ad_domain	
auth-style	string	Authentication type.

Name	Type	Description
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.
enabled	boolean	Specifies if the CIFS service is administratively enabled.

Name	Type	Description
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.

Name	Type	Description
workgroup	string	The workgroup name.

Example request

```
{
  "ad_domain": {
    "default_site": "string",
    "fqdn": "example.com",
    "organizational_unit": "string",
    "password": "string",
    "user": "string"
  },
  "auth-style": "domain",
  "auth_user_type": "string",
  "authentication_method": "string",
  "client_certificate": "PEM Cert",
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "client_secret": "<id_value>",
  "comment": "This CIFS Server Belongs to CS Department",
  "default_unix_user": "string",
  "group_policy_object_enabled": true,
  "key_vault_uri": "https://kmip-akv-keyvault.vault.azure.net/",
  "name": "CIFS1",
  "netbios": {
    "aliases": [
      "ALIAS_1",
      "ALIAS_2",
      "ALIAS_3"
    ],
    "wins_servers": [
      "10.224.65.20",
      "10.224.65.21"
    ]
  },
  "oauth_host": "login.microsoftonline.com",
  "options": {
    "max_connections_per_session": 32,
    "max_lifs_per_session": 256,
    "max_opens_same_file_per_tree": 1000,
    "max_same_tree_connect_per_session": 5000,
    "max_same_user_sessions_per_connection": 2500,
    "max_watches_set_per_tree": 500,
    "null_user_windows_name": "string",
    "smb_credits": 128,
    "widelink_reparse_versions": [
      "smb1"
    ]
  },
```

```
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "string",
  "proxy_username": "proxyuser",
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ],
    "restrict_anonymous": "string",
    "session_security": "string"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
  "timeout": 25,
  "workgroup": "workgrp1"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127	The cluster lacks a valid CIFS license.
3735751	Failed to authenticate and retrieve the access token from the Azure OAuth host.
3735752	Failed to extract the private key from the Azure Key Vault certificate.
3735753	Unsupported content_type in the Azure secrets response.
3735754	Failed to parse the JSON response from Azure Key Vault.
3735755	REST API call to Azure failed.
3735756	Invalid client certificate.
3735757	Failed to generate client assertion.
3735762	The provided Azure Key Vault configuration is incorrect.
3735763	The provided Azure Key Vault configuration is incomplete.
3735764	Request to Azure failed. Reason - Azure error code and Azure error message.
655388	Failed to create the CIFS server. Failure can occur due to multiple reasons. For example: STARTTLS and LDAPS cannot be used together or a password update failed or error from LDAP server or Kerberos Error: KDC has no support for encryption type.
655524	CIFS server creation failed.
655538	CIFS server creation failed because a server with the same name already exists.
655562	NetBIOS name is longer than 15 characters.
655563	NetBIOS name contains characters that are not allowed.

Error Code	Description
655771	The number of NetBIOS aliases cannot exceed the maximum supported number of '200'.
655914	Failed to create the Active Directory machine account.
655923	Retrieving credentials from AKV is not supported because the effective cluster version is not ONTAP 9.15.0 or later.
656464	Failed to create the Active Directory machine account. Reason: Invalid Credentials.
656465	Failed to create the Active Directory machine account. Reason: Account with same name already exists.
656466	Failed to create the Active Directory machine account. Reason: Domain Controller is not reachable or does not exist.
656467	Failed to create the Active Directory machine account. Reason: Organizational-Unit not found.
656473	Fields security.kdc_encryption and security.advertised_kdc_encryptions are mutually exclusive. Specify only one of the two.
655477	Only one CIFS server is supported per SVM.
656487	Missing fields when doing CIFS operation with hybrid auth user type.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store. POST and PATCH only.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server. POST and PATCH only.
password	string	The account password used to add this CIFS server to the Active Directory. This is not audited.
user	string	The user account used to add this CIFS server to the Active Directory.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

cifs_netbios

Name	Type	Description
aliases	array[string]	
enabled	boolean	Specifies whether NetBios name service (NBNS) is enabled for the CIFS. If this service is enabled, the CIFS server will start sending the broadcast for name registration.
wins_servers	array[string]	

cifs_service_options

Name	Type	Description
admin_to_root_mapping	boolean	Specifies whether or not Administrator can be mapped to the UNIX user "root".
advanced_sparse_file	boolean	Specifies whether or not the CIFS server supports the advanced sparse file capabilities. This allows CIFS clients to query the allocated ranges of a file and to write zeroes or free data blocks for ranges of a file.
backup_symlink_enabled	boolean	Specifies whether or not to preserve UNIX symlinks during backup through SMB.
client_dup_detection_enabled	boolean	Specifies whether or not client duplicate session detection is enabled for CIFS.
client_version_reporting_enabled	boolean	Specifies whether or not client version reporting is enabled for CIFS.

Name	Type	Description
copy_offload	boolean	Specifies whether or not to enable the Copy Offload feature. This feature enables direct data transfers within or between compatible storage devices without transferring the data through the host computer. Note that this will also enable/disable the direct copy feature accordingly.
dac_enabled	boolean	Specifies whether or not the Dynamic Access Control (DAC) feature is enabled for the CIFS server.
export_policy_enabled	boolean	Specifies whether or not export policies are enabled for CIFS.
fake_open	boolean	Specifies whether or not fake open support is enabled. This parameter allows you to optimize the open and close requests coming from SMB 2 clients.
fsctl_trim	boolean	Specifies whether or not the trim requests (FSCTL_FILE_LEVEL_TRIM) are supported on the CIFS server.
junction_reparse	boolean	Specifies whether or not the reparse point support is enabled. When enabled the CIFS server exposes junction points to Windows clients as reparse points. This parameter is only active if the client has negotiated use of the SMB 2 or SMB 3 protocol. This parameter is not supported for SVMs with Infinite Volume.
large_mtu	boolean	Specifies whether or not SMB clients can send reads up to 1 MB in size.

Name	Type	Description
max_connections_per_session	integer	Specifies the maximum number of connections allowed per multichannel session.
max_lifs_per_session	integer	Specifies the maximum number of LIFs advertised per multichannel session.
max_opens_same_file_per_tree	integer	Specifies the maximum number of opens on the same file per tree.
max_same_tree_connect_per_session	integer	Specifies the maximum number of same tree connections per session.
max_same_user_sessions_per_connection	integer	Specifies the maximum number of same user sessions per connection.
max_watches_set_per_tree	integer	Specifies the maximum number of watches set per tree.
multichannel	boolean	Specifies whether or not the CIFS server supports Multichannel.
null_user_windows_name	string	Specifies a Windows User or Group name that should be mapped in case of a NULL user value.
path_component_cache	boolean	Specifies whether or not the path component cache is enabled on the CIFS server.
referral	boolean	Specifies whether or not to refer clients to more optimal LIFs. When enabled, it automatically refers clients to a data LIF local to the node which hosts the root of the requested share.

Name	Type	Description
shadowcopy	boolean	Specifies whether or not to enable the Shadowcopy Feature. This feature enables to take share-based backup copies of data that is in a data-consistent state at a specific point in time where the data is accessed over SMB 3.0 shares.
shadowcopy_dir_depth	integer	Specifies the maximum level of subdirectories on which ONTAP should create shadow copies. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
smb_credits	integer	Specifies the maximum number of outstanding requests on a CIFS connection.
trusted_domain_enum_search_enabled	boolean	Specifies whether or not to enable trusted domain search. • If this parameter is set to true, it displays CIFS options only for CIFS servers that support enumeration of bidirectional trusted domains and that support searching in all bidirectional trusted domains when performing Windows user lookups for UNIX user to Windows user name mapping. • If set to false, it displays CIFS options for CIFS servers that do not support enumeration of bidirectional trusted domains.
widelink_reparse_versions	array[string]	Specifies the CIFS protocol versions for which the widelink is reported as reparse point.

cifs_service_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	
aes_netlogon_enabled	boolean	Specifies whether or not an AES session key is enabled for the Netlogon channel.
encrypt_dc_connection	boolean	Specifies whether encryption is required for domain controller connections.

Name	Type	Description
kdc_encryption	boolean	This attribute has been deprecated. Use "security.advertised_kdc_encryptions" to specify the encryption type to use. Specifies whether AES-128 and AES-256 encryption is enabled for all Kerberos-based communication with the Active Directory KDC. To take advantage of the strongest security with Kerberos-based communication, AES-256 and AES-128 encryption can be enabled on the CIFS server. Kerberos-related communication for CIFS is used during CIFS server creation on the SVM, as well as during the SMB session setup phase. The CIFS server supports the following encryption types for Kerberos communication: • RC4-HMAC • DES • AES When the CIFS server is created, the domain controller creates a computer machine account in Active Directory. After a newly created machine account authenticates, the KDC and the CIFS server negotiates encryption types. At this time, the KDC becomes aware of the

Name	Type	Description
ldap_referral_enabled	boolean	Specifies whether or not LDAP referral chasing is enabled for AD LDAP connections.
restrict_anonymous	string	Specifies what level of access an anonymous user is granted. An anonymous user (also known as a "null user") can list or enumerate certain types of system information from Windows hosts on the network, including user names and details, account policies, and share names. Access for the anonymous user can be controlled by specifying one of three access restriction settings. The available values are: • no_restriction - No access restriction for an anonymous user. • no_enumeration - Enumeration is restricted for an anonymous user. • no_access - All access is restricted for an anonymous user.
session_security	string	Specifies client session security for AD LDAP connections. The available values are: • none - No Signing or Sealing. • sign - Sign LDAP traffic. • seal - Seal and Sign LDAP traffic
smb_encryption	boolean	Specifies whether encryption is required for incoming CIFS traffic.
smb_signing	boolean	Specifies whether signing is required for incoming CIFS traffic. SMB signing helps to ensure that network traffic between the CIFS server and the client is not compromised.

Name	Type	Description
try_ldap_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_ldaps	boolean	Specifies whether or not to use use LDAPS for secure Active Directory LDAP connections by using the TLS/SSL protocols.
use_start_tls	boolean	Specifies whether or not to use SSL/TLS for allowing secure LDAP communication with Active Directory LDAP servers.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_service

Name	Type	Description
ad_domain	ad_domain	
auth-style	string	Authentication type.
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.

Name	Type	Description
enabled	boolean	Specifies if the CIFS service is administratively enabled.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.

Name	Type	Description
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a CIFS server and related configurations

DELETE `/protocols/cifs/services/{svm.uuid}`

Introduced In: 9.6

Deletes a CIFS server and related CIFS configurations.

Important notes:

- The default value for the "force" field is false.

- If the "force" field is set along with user login credentials, the local CIFS configuration will be deleted irrespective of any communication errors.
- If the "force" field alone is set without passing the user login credentials, the local CIFS configuration will be deleted by not making any request to Active Directory.

Related ONTAP commands

- `vserver cifs server delete`
- `vserver cifs remove-netbios-aliases`

Learn more

- DOC /protocols/cifs/services

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	When set, the local CIFS configuration is deleted irrespective of any communication errors. Default value for this field is false. • Introduced in: 9.11

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
ad_domain	ad_domain_delete	

Name	Type	Description
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
oauth_host	string	Open authorization server host name.
proxy_host	string	Proxy host.
proxy_password	string	Proxy password. Password is not audited.

Name	Type	Description
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

Example request

```
{
  "ad_domain": {
    "fqdn": "example.com",
    "organizational_unit": "string",
    "password": "string",
    "user": "string"
  },
  "auth_user_type": "string",
  "authentication_method": "string",
  "client_certificate": "PEM Cert",
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "client_secret": "<id_value>",
  "key_vault_uri": "https://kmip-akv-keyvault.vault.azure.net/",
  "oauth_host": "login.microsoftonline.com",
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "string",
  "proxy_username": "proxyuser",
  "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
  "timeout": 25,
  "workgroup": "workgrp1"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655525	In order to delete an Active Directory machine account for the CIFS server, you must supply the name and password of a Windows account with sufficient privileges.
3735751	Failed to authenticate and retrieve the access token from the Azure OAuth host.
3735752	Failed to extract the private key from the Azure Key Vault certificate.
3735753	Unsupported content_type in the Azure secrets response.
3735754	Failed to parse the JSON response from Azure Key Vault.
3735755	REST API call to Azure failed.
3735756	Invalid client certificate.
3735757	Failed to generate client assertion.

Error Code	Description
3735762	The provided Azure Key Vault configuration is incorrect.
3735763	The provided Azure Key Vault configuration is incomplete.
3735764	Request to Azure failed. Reason - Azure error code and Azure error message.
655563	NetBIOS name contains characters that are not allowed.
655562	NetBIOS name is longer than 15 characters.
655923	Retrieving credentials from AKV is not supported because the effective cluster version is not ONTAP 9.15.0 or later.
656487	Missing fields when doing CIFS operation with hybrid auth user type.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

ad_domain_delete

Name	Type	Description
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store. POST and PATCH only.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server. POST and PATCH only.
password	string	The account password used to add this CIFS server to the Active Directory. This is not audited.
user	string	The user account used to add this CIFS server to the Active Directory.

cifs_service_delete

Name	Type	Description
ad_domain	ad_domain_delete	
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true

Name	Type	Description
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
oauth_host	string	Open authorization server host name.
proxy_host	string	Proxy host.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.

Name	Type	Description
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a CIFS server

GET `/protocols/cifs/services/{svm.uuid}`

Introduced In: 9.6

Retrieves a CIFS server.

Related ONTAP commands

- `vserver cifs server show`
- `vserver cifs server options show`
- `vserver cifs server security show`

Learn more

- DOC /protocols/cifs/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ad_domain	ad_domain	

Name	Type	Description
auth-style	string	Authentication type.
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.
enabled	boolean	Specifies if the CIFS service is administratively enabled.
group_policy_object_enabled	boolean	If set to true, group policies will be applied to the SVM.

Name	Type	Description
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.

Name	Type	Description
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ad_domain": {
    "default_site": "string",
    "fqdn": "example.com",
    "organizational_unit": "string"
  },
  "auth-style": "domain",
  "auth_user_type": "string",
  "authentication_method": "string",
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "comment": "This CIFS Server Belongs to CS Department",
  "default_unix_user": "string",
  "key_vault_uri": "https://kmip-akv-keyvault.vault.azure.net/",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "CIFS1",
```

```
  "netbios": {
    "aliases": [
      "ALIAS_1",
      "ALIAS_2",
      "ALIAS_3"
    ],
    "wins_servers": [
      "10.224.65.20",
      "10.224.65.21"
    ]
  },
  "oauth_host": "login.microsoftonline.com",
  "options": {
    "max_connections_per_session": 32,
    "max_lifs_per_session": 256,
    "max_opens_same_file_per_tree": 1000,
    "max_same_tree_connect_per_session": 5000,
    "max_same_user_sessions_per_connection": 2500,
    "max_watches_set_per_tree": 500,
    "null_user_windows_name": "string",
    "smb_credits": 128,
    "widelink_reparse_versions": [
      "smb1"
    ]
  },
  "proxy_host": "proxy.eng.com",
  "proxy_port": 1234,
  "proxy_type": "string",
  "proxy_username": "proxyuser",
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ],
    "lm_compatibility_level": "string",
    "restrict_anonymous": "string",
    "session_security": "string"
  },
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
```

```
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
  "timeout": 25,
  "workgroup": "workgrp1"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store. POST and PATCH only.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server. POST and PATCH only.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

cifs_netbios

Name	Type	Description
aliases	array[string]	
enabled	boolean	Specifies whether NetBios name service (NBNS) is enabled for the CIFS. If this service is enabled, the CIFS server will start sending the broadcast for name registration.
wins_servers	array[string]	

cifs_service_options

Name	Type	Description
admin_to_root_mapping	boolean	Specifies whether or not Administrator can be mapped to the UNIX user "root".
advanced_sparse_file	boolean	Specifies whether or not the CIFS server supports the advanced sparse file capabilities. This allows CIFS clients to query the allocated ranges of a file and to write zeroes or free data blocks for ranges of a file.
backup_symlink_enabled	boolean	Specifies whether or not to preserve UNIX symlinks during backup through SMB.
client_dup_detection_enabled	boolean	Specifies whether or not client duplicate session detection is enabled for CIFS.
client_version_reporting_enabled	boolean	Specifies whether or not client version reporting is enabled for CIFS.

Name	Type	Description
copy_offload	boolean	Specifies whether or not to enable the Copy Offload feature. This feature enables direct data transfers within or between compatible storage devices without transferring the data through the host computer. Note that this will also enable/disable the direct copy feature accordingly.
dac_enabled	boolean	Specifies whether or not the Dynamic Access Control (DAC) feature is enabled for the CIFS server.
export_policy_enabled	boolean	Specifies whether or not export policies are enabled for CIFS.
fake_open	boolean	Specifies whether or not fake open support is enabled. This parameter allows you to optimize the open and close requests coming from SMB 2 clients.
fsctl_trim	boolean	Specifies whether or not the trim requests (FSCTL_FILE_LEVEL_TRIM) are supported on the CIFS server.
junction_reparse	boolean	Specifies whether or not the reparse point support is enabled. When enabled the CIFS server exposes junction points to Windows clients as reparse points. This parameter is only active if the client has negotiated use of the SMB 2 or SMB 3 protocol. This parameter is not supported for SVMs with Infinite Volume.
large_mtu	boolean	Specifies whether or not SMB clients can send reads up to 1 MB in size.

Name	Type	Description
max_connections_per_session	integer	Specifies the maximum number of connections allowed per multichannel session.
max_lifs_per_session	integer	Specifies the maximum number of LIFs advertised per multichannel session.
max_opens_same_file_per_tree	integer	Specifies the maximum number of opens on the same file per tree.
max_same_tree_connect_per_session	integer	Specifies the maximum number of same tree connections per session.
max_same_user_sessions_per_connection	integer	Specifies the maximum number of same user sessions per connection.
max_watches_set_per_tree	integer	Specifies the maximum number of watches set per tree.
multichannel	boolean	Specifies whether or not the CIFS server supports Multichannel.
null_user_windows_name	string	Specifies a Windows User or Group name that should be mapped in case of a NULL user value.
path_component_cache	boolean	Specifies whether or not the path component cache is enabled on the CIFS server.
referral	boolean	Specifies whether or not to refer clients to more optimal LIFs. When enabled, it automatically refers clients to a data LIF local to the node which hosts the root of the requested share.

Name	Type	Description
shadowcopy	boolean	Specifies whether or not to enable the Shadowcopy Feature. This feature enables to take share-based backup copies of data that is in a data-consistent state at a specific point in time where the data is accessed over SMB 3.0 shares.
shadowcopy_dir_depth	integer	Specifies the maximum level of subdirectories on which ONTAP should create shadow copies. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
smb_credits	integer	Specifies the maximum number of outstanding requests on a CIFS connection.
trusted_domain_enum_search_enabled	boolean	Specifies whether or not to enable trusted domain search. • If this parameter is set to true, it displays CIFS options only for CIFS servers that support enumeration of bidirectional trusted domains and that support searching in all bidirectional trusted domains when performing Windows user lookups for UNIX user to Windows user name mapping. • If set to false, it displays CIFS options for CIFS servers that do not support enumeration of bidirectional trusted domains.
widelink_reparse_versions	array[string]	Specifies the CIFS protocol versions for which the widelink is reported as reparse point.

cifs_service_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	
aes_netlogon_enabled	boolean	Specifies whether or not an AES session key is enabled for the Netlogon channel.
encrypt_dc_connection	boolean	Specifies whether encryption is required for domain controller connections.

Name	Type	Description
kdc_encryption	boolean	This attribute has been deprecated. Use "security.advertised_kdc_encryptions" to specify the encryption type to use. Specifies whether AES-128 and AES-256 encryption is enabled for all Kerberos-based communication with the Active Directory KDC. To take advantage of the strongest security with Kerberos-based communication, AES-256 and AES-128 encryption can be enabled on the CIFS server. Kerberos-related communication for CIFS is used during CIFS server creation on the SVM, as well as during the SMB session setup phase. The CIFS server supports the following encryption types for Kerberos communication: • RC4-HMAC • DES • AES When the CIFS server is created, the domain controller creates a computer machine account in Active Directory. After a newly created machine account authenticates, the KDC and the CIFS server negotiates encryption types. At this time, the KDC becomes aware of the

Name	Type	Description
ldap_referral_enabled	boolean	Specifies whether or not LDAP referral chasing is enabled for AD LDAP connections.
lm_compatibility_level	string	It is CIFS server minimum security level, also known as the LMCompatibilityLevel. The minimum security level is the minimum level of the security tokens that the CIFS server accepts from SMB clients. The available values are: • lm_ntlm_ntlmv2_krb Accepts LM, NTLM, NTLMv2 and Kerberos • ntlm_ntlmv2_krb Accepts NTLM, NTLMv2 and Kerberos • ntlmv2_krb Accepts NTLMv2 and Kerberos • krb Accepts Kerberos only
restrict_anonymous	string	Specifies what level of access an anonymous user is granted. An anonymous user (also known as a "null user") can list or enumerate certain types of system information from Windows hosts on the network, including user names and details, account policies, and share names. Access for the anonymous user can be controlled by specifying one of three access restriction settings. The available values are: • no_restriction - No access restriction for an anonymous user. • no_enumeration - Enumeration is restricted for an anonymous user. • no_access - All access is restricted for an anonymous user.

Name	Type	Description
session_security	string	Specifies client session security for AD LDAP connections. The available values are: • none - No Signing or Sealing. • sign - Sign LDAP traffic. • seal - Seal and Sign LDAP traffic
smb_encryption	boolean	Specifies whether encryption is required for incoming CIFS traffic.
smb_signing	boolean	Specifies whether signing is required for incoming CIFS traffic. SMB signing helps to ensure that network traffic between the CIFS server and the client is not compromised.
try_ldap_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_ldaps	boolean	Specifies whether or not to use use LDAPS for secure Active Directory LDAP connections by using the TLS/SSL protocols.
use_start_tls	boolean	Specifies whether or not to use SSL/TLS for allowing secure LDAP communication with Active Directory LDAP servers.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update CIFS mandatory and optional parameters

PATCH `/protocols/cifs/services/{svm.uuid}`

Introduced In: 9.6

Updates both the mandatory and optional parameters of the CIFS configuration. Ensure the CIFS server is administratively disabled when renaming the CIFS server or modifying the *ad_domain* properties.

Related ONTAP commands

- `vserver cifs server modify`
- `vserver cifs server options modify`
- `vserver cifs security modify`
- `vserver cifs server add-netbios-aliases`
- `vserver cifs server remove-netbios-aliases`
- `vserver cifs group-policy modify`

Learn more

- DOC /protocols/cifs/services

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	If this is set and a machine account with the same name as specified in 'cifs-server name' exists in the Active Directory, existing machine account will be overwritten and reused. The default value for this field is false. • Introduced in: 9.11

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
ad_domain	ad_domain	
auth-style	string	Authentication type.

Name	Type	Description
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.
enabled	boolean	Specifies if the CIFS service is administratively enabled.

Name	Type	Description
group_policy_object_enabled	boolean	If set to true, group policies will be applied to the SVM.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.

Name	Type	Description
workgroup	string	The workgroup name.

Example request

```
{
  "ad_domain": {
    "default_site": "string",
    "fqdn": "example.com",
    "organizational_unit": "string",
    "password": "string",
    "user": "string"
  },
  "auth-style": "domain",
  "auth_user_type": "string",
  "authentication_method": "string",
  "client_certificate": "PEM Cert",
  "client_id": "e959d1b5-5a63-4284-9268-851e30e3eceb",
  "client_secret": "<id_value>",
  "comment": "This CIFS Server Belongs to CS Department",
  "default_unix_user": "string",
  "key_vault_uri": "https://kmip-akv-keyvault.vault.azure.net/",
  "name": "CIFS1",
  "netbios": {
    "aliases": [
      "ALIAS_1",
      "ALIAS_2",
      "ALIAS_3"
    ],
    "wins_servers": [
      "10.224.65.20",
      "10.224.65.21"
    ]
  },
  "oauth_host": "login.microsoftonline.com",
  "options": {
    "max_connections_per_session": 32,
    "max_lifs_per_session": 256,
    "max_opens_same_file_per_tree": 1000,
    "max_same_tree_connect_per_session": 5000,
    "max_same_user_sessions_per_connection": 2500,
    "max_watches_set_per_tree": 500,
    "null_user_windows_name": "string",
    "smb_credits": 128,
    "widelink_reparse_versions": [
      "smb1"
    ]
  },
  "proxy_host": "proxy.eng.com",
```

```
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "string",
  "proxy_username": "proxyuser",
  "security": {
    "advertised_kdc_encryptions": [
      "string"
    ],
    "lm_compatibility_level": "string",
    "restrict_anonymous": "string",
    "session_security": "string"
  },
  "tenant_id": "c9f32fcb-4ab7-40fe-af1b-1850d46cfbbe",
  "timeout": 25,
  "workgroup": "workgrp1"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3735751	Failed to authenticate and retrieve the access token from the Azure OAuth host.
3735752	Failed to extract the private key from the Azure Key Vault certificate.
3735753	Unsupported content_type in the Azure secrets response.
3735754	Failed to parse the JSON response from Azure Key Vault.
3735755	REST API call to Azure failed.
3735756	Invalid client certificate.
3735757	Failed to generate client assertion.
3735762	The provided Azure Key Vault configuration is incorrect.
3735763	The provided Azure Key Vault configuration is incomplete.
3735764	Request to Azure failed. Reason - Azure error code and Azure error message.
655390	Failed to modify the CIFS server. Failure can occur due to multiple reasons. For example: STARTTLS and LDAPS cannot be used together or the group policy is already enabled for the SVM.
655562	NetBIOS name is longer than 15 characters.
655538	Unable to modify the CIFS server. The server name is already used by another SVM.
655563	NetBIOS name contains characters that are not allowed.
655771	The number of NetBIOS aliases cannot exceed the maximum supported number of '200'.
655923	Retrieving credentials from AKV is not supported because the effective cluster version is not ONTAP 9.15.0 or later.
656473	Fields security.kdc_encryption and security.advertised_kdc_encryptions are mutually exclusive. Specify only one of the two.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store. POST and PATCH only.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server. POST and PATCH only.
password	string	The account password used to add this CIFS server to the Active Directory. This is not audited.
user	string	The user account used to add this CIFS server to the Active Directory.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

cifs_netbios

Name	Type	Description
aliases	array[string]	
enabled	boolean	Specifies whether NetBios name service (NBNS) is enabled for the CIFS. If this service is enabled, the CIFS server will start sending the broadcast for name registration.
wins_servers	array[string]	

cifs_service_options

Name	Type	Description
admin_to_root_mapping	boolean	Specifies whether or not Administrator can be mapped to the UNIX user "root".
advanced_sparse_file	boolean	Specifies whether or not the CIFS server supports the advanced sparse file capabilities. This allows CIFS clients to query the allocated ranges of a file and to write zeroes or free data blocks for ranges of a file.
backup_symlink_enabled	boolean	Specifies whether or not to preserve UNIX symlinks during backup through SMB.
client_dup_detection_enabled	boolean	Specifies whether or not client duplicate session detection is enabled for CIFS.
client_version_reporting_enabled	boolean	Specifies whether or not client version reporting is enabled for CIFS.

Name	Type	Description
copy_offload	boolean	Specifies whether or not to enable the Copy Offload feature. This feature enables direct data transfers within or between compatible storage devices without transferring the data through the host computer. Note that this will also enable/disable the direct copy feature accordingly.
dac_enabled	boolean	Specifies whether or not the Dynamic Access Control (DAC) feature is enabled for the CIFS server.
export_policy_enabled	boolean	Specifies whether or not export policies are enabled for CIFS.
fake_open	boolean	Specifies whether or not fake open support is enabled. This parameter allows you to optimize the open and close requests coming from SMB 2 clients.
fsctl_trim	boolean	Specifies whether or not the trim requests (FSCTL_FILE_LEVEL_TRIM) are supported on the CIFS server.
junction_reparse	boolean	Specifies whether or not the reparse point support is enabled. When enabled the CIFS server exposes junction points to Windows clients as reparse points. This parameter is only active if the client has negotiated use of the SMB 2 or SMB 3 protocol. This parameter is not supported for SVMs with Infinite Volume.
large_mtu	boolean	Specifies whether or not SMB clients can send reads up to 1 MB in size.

Name	Type	Description
max_connections_per_session	integer	Specifies the maximum number of connections allowed per multichannel session.
max_lifs_per_session	integer	Specifies the maximum number of LIFs advertised per multichannel session.
max_opens_same_file_per_tree	integer	Specifies the maximum number of opens on the same file per tree.
max_same_tree_connect_per_session	integer	Specifies the maximum number of same tree connections per session.
max_same_user_sessions_per_connection	integer	Specifies the maximum number of same user sessions per connection.
max_watches_set_per_tree	integer	Specifies the maximum number of watches set per tree.
multichannel	boolean	Specifies whether or not the CIFS server supports Multichannel.
null_user_windows_name	string	Specifies a Windows User or Group name that should be mapped in case of a NULL user value.
path_component_cache	boolean	Specifies whether or not the path component cache is enabled on the CIFS server.
referral	boolean	Specifies whether or not to refer clients to more optimal LIFs. When enabled, it automatically refers clients to a data LIF local to the node which hosts the root of the requested share.

Name	Type	Description
shadowcopy	boolean	Specifies whether or not to enable the Shadowcopy Feature. This feature enables to take share-based backup copies of data that is in a data-consistent state at a specific point in time where the data is accessed over SMB 3.0 shares.
shadowcopy_dir_depth	integer	Specifies the maximum level of subdirectories on which ONTAP should create shadow copies. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
smb_credits	integer	Specifies the maximum number of outstanding requests on a CIFS connection.
trusted_domain_enum_search_enabled	boolean	Specifies whether or not to enable trusted domain search. • If this parameter is set to true, it displays CIFS options only for CIFS servers that support enumeration of bidirectional trusted domains and that support searching in all bidirectional trusted domains when performing Windows user lookups for UNIX user to Windows user name mapping. • If set to false, it displays CIFS options for CIFS servers that do not support enumeration of bidirectional trusted domains.
widelink_reparse_versions	array[string]	Specifies the CIFS protocol versions for which the widelink is reported as reparse point.

cifs_service_security

Name	Type	Description
advertised_kdc_encryptions	array[string]	
aes_netlogon_enabled	boolean	Specifies whether or not an AES session key is enabled for the Netlogon channel.
encrypt_dc_connection	boolean	Specifies whether encryption is required for domain controller connections.

Name	Type	Description
kdc_encryption	boolean	This attribute has been deprecated. Use "security.advertised_kdc_encryptions" to specify the encryption type to use. Specifies whether AES-128 and AES-256 encryption is enabled for all Kerberos-based communication with the Active Directory KDC. To take advantage of the strongest security with Kerberos-based communication, AES-256 and AES-128 encryption can be enabled on the CIFS server. Kerberos-related communication for CIFS is used during CIFS server creation on the SVM, as well as during the SMB session setup phase. The CIFS server supports the following encryption types for Kerberos communication: • RC4-HMAC • DES • AES When the CIFS server is created, the domain controller creates a computer machine account in Active Directory. After a newly created machine account authenticates, the KDC and the CIFS server negotiates encryption types. At this time, the KDC becomes aware of the

Name	Type	Description
ldap_referral_enabled	boolean	Specifies whether or not LDAP referral chasing is enabled for AD LDAP connections.
lm_compatibility_level	string	It is CIFS server minimum security level, also known as the LMCompatibilityLevel. The minimum security level is the minimum level of the security tokens that the CIFS server accepts from SMB clients. The available values are: • lm_ntlm_ntlmv2_krb Accepts LM, NTLM, NTLMv2 and Kerberos • ntlm_ntlmv2_krb Accepts NTLM, NTLMv2 and Kerberos • ntlmv2_krb Accepts NTLMv2 and Kerberos • krb Accepts Kerberos only
restrict_anonymous	string	Specifies what level of access an anonymous user is granted. An anonymous user (also known as a "null user") can list or enumerate certain types of system information from Windows hosts on the network, including user names and details, account policies, and share names. Access for the anonymous user can be controlled by specifying one of three access restriction settings. The available values are: • no_restriction - No access restriction for an anonymous user. • no_enumeration - Enumeration is restricted for an anonymous user. • no_access - All access is restricted for an anonymous user.

Name	Type	Description
session_security	string	Specifies client session security for AD LDAP connections. The available values are: • none - No Signing or Sealing. • sign - Sign LDAP traffic. • seal - Seal and Sign LDAP traffic
smb_encryption	boolean	Specifies whether encryption is required for incoming CIFS traffic.
smb_signing	boolean	Specifies whether signing is required for incoming CIFS traffic. SMB signing helps to ensure that network traffic between the CIFS server and the client is not compromised.
try_ldap_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_ldaps	boolean	Specifies whether or not to use use LDAPS for secure Active Directory LDAP connections by using the TLS/SSL protocols.
use_start_tls	boolean	Specifies whether or not to use SSL/TLS for allowing secure LDAP communication with Active Directory LDAP servers.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_service

Name	Type	Description
ad_domain	ad_domain	
auth-style	string	Authentication type.
auth_user_type	string	Specifies the type of user who can access the SMB Volume. The default is domain_user. In the case of a hybrid-user, ONTAP won't contact on-premise ADDS. • enum: ["domain_user", "hybrid_user"] • Introduced in: 9.16 • x-nullable: true
authentication_method	string	Specifies the authentication method. The available values are: • client_secret • certificate
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.

Name	Type	Description
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV or EntraId.
client_secret	string	Secret used by the application to prove its identity to AKV.
comment	string	A descriptive text comment for the CIFS server. SMB clients can see the CIFS server comment when browsing servers on the network. If there is a space in the comment, you must enclose the entire string in quotation marks.
default_unix_user	string	Specifies the UNIX user to which any authenticated CIFS user is mapped to, if the normal user mapping rules fails.
enabled	boolean	Specifies if the CIFS service is administratively enabled.
group_policy_object_enabled	boolean	If set to true, group policies will be applied to the SVM.
key_vault_uri	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • Introduced in: 9.15 • x-nullable: true
name	string	The name of the CIFS server.
netbios	cifs_netbios	
oauth_host	string	Open authorization server host name.
options	cifs_service_options	
proxy_host	string	Proxy host.

Name	Type	Description
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port.
proxy_type	string	Proxy type.
proxy_username	string	Proxy username.
security	cifs_service_security	
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV or EntraId.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.
workgroup	string	The workgroup name.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve CIFS protocol historical performance metrics for an SVM

GET `/protocols/cifs/services/{svm.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for the CIFS protocol of an SVM.

Parameters

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
svm.uuid	string	path	True	Unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View CIFS active file sessions

Protocols CIFS session files endpoint overview

Overview

ONTAP `cifs sessions file show` functionality is used to provide a list of currently opened files.

Information on the open files

- Lists all files opened in current session.

Example

Retrieving established open file information

To retrieve the list of open files, use the following API. Note that *return_records=true*.

```
# The API:
GET /protocols/cifs/session/files

# The call:
curl -X GET "https://<cluster-mgmt-
ip>/api/protocols/cifs/session/files?fields=*&return_timeout=15&return_rec
ords=true" -H "accept: application/json"
```

```
# The response:
{
"records": [
                {
                            "node": {
                              "uuid": "a5f65ec0-3550-11ee-93c5-
005056ae78de",
                              "name": "sti220-vsim-sr050u"
                            },
                            "svm": {
                              "name": "vs0",
                              "uuid": "80e795f4-3553-11ee-9f97-
005056ae78de"
                            },
                            "identifier": 109,
                            "connection": {
                              "identifier": 103985,
                              "count": 1
                            },
                            "session": {
                              "identifier": 10878444899913433090
                            },
                            "type": "regular",
                            "open_mode": "r",
                            "volume": {
                              "uuid": "8384f6ae-3553-11ee-a3c3-
005056ae0dd5",
                              "name": "root_vs0"
                            },
                            "share": {
                              "name": "sh1",
                              "mode": "r"
                            },
                            "path": "first_file.txt",
                            "continuously_available": "no",
                            "range_locks_count": 0
                },
                {
                            "node": {
                              "uuid": "a5f65ec0-3550-11ee-93c5-
005056ae78de",
                              "name": "sti220-vsim-sr050u"
                            },
                            "svm": {
                              "name": "vs0",
                              "uuid": "80e795f4-3553-11ee-9f97-
```

```
005056ae78de"
                            },
                            "identifier": 110,
                            "connection": {
                              "identifier": 103985,
                              "count": 1
                            },
                            "session": {
                              "identifier": 10878444899913433090
                            },
                            "type": "regular",
                            "open_mode": "r",
                            "volume": {
                              "uuid": "8384f6ae-3553-11ee-a3c3-
005056ae0dd5",
                              "name": "root_vs0"
                             },
                             "share": {
                               "name": "sh1",
                               "mode": "r"
                             },
                             "path": "second_file.txt",
                             "continuously_available": "no",
                             "range_locks_count": 0
                }
           ],
           "num_records": 2
}
```


Retrieving specific open file Information

```
# The API:
GET
/protocols/cifs/session/files/{node.uuid}/{svm.uuid}/{file.identifier}/{co
nnection.identifier}/{session_id}

# The call:
curl -X GET "https://<cluster-mgmt-
ip>/api/protocols/cifs/session/files/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-
005056ae78de/109/103985/10878444899913433090"

# The response:
        {
              "node": {
                "uuid": "a5f65ec0-3550-11ee-93c5-005056ae78de",
                "name": "sti220-vsim-sr050u"
              },
              "svm": {
                "uuid": "80e795f4-3553-11ee-9f97-005056ae78de",
                "name": "vs0"
              },
              "identifier": 109,
              "connection": {
                "identifier": 103985,
                "count": 1
              },
              "session": {
                "identifier": 10878444899913433000
              },
              "type": "regular",
              "open_mode": "r",
              "volume": {
                "uuid": "8384f6ae-3553-11ee-a3c3-005056ae0dd5",
                "name": "root_vs0"
              },
              "share": {
                "name": "sh1",
                "mode": "r"
              },
              "path": "first_file.txt",
              "continuously_available": "no",
              "range_locks_count": 0
        }
```

Closing a specific file based on `file.identifier`, `connection.identifier` and `session_id`

The file being closed is identified by the UUID of its SVM, the corresponding file.identifier, connection.identifier and session_id.

```
# The API:
DELETE
/protocols/cifs/session/files/{node.uuid}/{svm.uuid}/{file.identifier}/{co
nnection.identifier}/{session_id}

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/protocols/cifs/session/files/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-
005056ae78de/109/103985/10878444899913433090" -H "accept:
application/json"
```

Retrieve CIFS open files

GET `/protocols/cifs/session/files`

Introduced In: 9.11

Retrieves the CIFS sessions Open Files information for all SVMs.

Related ONTAP commands

- `vserver cifs session file show`

Learn more

- DOC /protocols/cifs/session/files

Parameters

Name	Type	In	Required	Description
session.identifier	integer	query	False	Filter by session.identifier
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
type	string	query	False	Filter by type

Name	Type	In	Required	Description
path	string	query	False	Filter by path
identifier	integer	query	False	Filter by identifier
continuously_available	string	query	False	Filter by continuously_available
connection.identifier	integer	query	False	Filter by connection.identifier
connection.count	integer	query	False	Filter by connection.count
range_locks_count	integer	query	False	Filter by range_locks_count
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
open_mode	string	query	False	Filter by open_mode
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
share.mode	string	query	False	Filter by share.mode
share.name	string	query	False	Filter by share.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[cifs_open_file]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "connection": {
        "count": 3,
        "identifier": 356756
      },
      "continuously_available": "no",
      "identifier": 17,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "open_mode": "r",
      "path": "sub1\\sub2\\f4",
      "range_locks_count": 4,
      "session": {
        "identifier": 8966666858094657537
      },
      "share": {
        "mode": "r",
        "name": "share1"
      },
      "svm": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "type": "regular",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

connection

Name	Type	Description
count	integer	The number of CIFS connections associated with the CIFS session.
identifier	integer	The connection that is used to open the file.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

session

Name	Type	Description
identifier	integer	Session under which file is opened.

share

Name	Type	Description
mode	string	The share mode used to open the file. The share mode can be a combination of: • r: read mode • w: write mode • d: delete
name	string	CIFS share name where the file resides.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

cifs_open_file

Manage opened files over CIFS.

Name	Type	Description
_links	self_link	
connection	connection	
continuously_available	string	The type of continuous availability protection provided to the file. Opened files are continuously available if there are opened through a SMB3 client through a share with "continuously_available" set to yes. These open files are capable of non-disruptively recovering from take over and giveback as well as general aggregate relocation. • no: the open file is not continuously available. • yes: the open file is continuously available.
identifier	integer	The unique identifier for the opened file.
node	node	

Name	Type	Description
open_mode	string	Open mode corresponding to the opened file • r: Opened for read • w: Opened for write • d: Opened for Delete
path	string	Path from CIFS share.
range_locks_count	integer	The number of range locks granted on the file.
session	session	
share	share	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	The type of opened file. The file can be a regular file, directory, a symbolic link to an existing file/directory, or an alternate data stream.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Close open files identified by SVM

DELETE `/protocols/cifs/session/files/{node.uuid}/{svm.uuid}/{identifier}/{connection.identifier}/{session.identifier}`

Introduced In: 9.11

Closes open files identified by svm.uuid, file.identifier, connection.identifier and session_id.

Related ONTAP commands

- `vserver cifs session file close`

Learn more

- DOC /protocols/cifs/session/files

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID.
identifier	integer	path	True	File ID • format: int64
connection.identifier	integer	path	True	Connection ID
session.identifier	integer	path	True	Session ID • format: int64
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a CIFS open file

GET
`/protocols/cifs/session/files/{node.uuid}/{svm.uuid}/{identifier}/{connection.identifier}/{session.identifier}`

Introduced In: 9.11

Retrieves specific CIFS session Open Files information.

Learn more

- DOC /protocols/cifs/session/files

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID.
identifier	integer	path	True	File ID • format: int64
connection.identifier	integer	path	True	Connection ID
session.identifier	integer	path	True	Session ID • format: int64
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
connection	connection	

Name	Type	Description
continuously_available	string	The type of continuous availability protection provided to the file. Opened files are continuously available if there are opened through a SMB3 client through a share with "continuously_available" set to yes. These open files are capable of non-disruptively recovering from take over and giveback as well as general aggregate relocation. • no: the open file is not continuously available. • yes: the open file is continuously available.
identifier	integer	The unique identifier for the opened file.
node	node	
open_mode	string	Open mode corresponding to the opened file • r: Opened for read • w: Opened for write • d: Opened for Delete
path	string	Path from CIFS share.
range_locks_count	integer	The number of range locks granted on the file.
session	session	
share	share	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	The type of opened file. The file can be a regular file, directory, a symbolic link to an existing file/directory, or an alternate data stream.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "connection": {
    "count": 3,
    "identifier": 356756
  },
  "continuously_available": "no",
  "identifier": 17,
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "open_mode": "r",
  "path": "sub1\\sub2\\f4",
  "range_locks_count": 4,
  "session": {
    "identifier": 8966666858094657537
  },
  "share": {
    "mode": "r",
    "name": "share1"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "regular",
  "volume": {
    "_links": {
      "self": {
```

```
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

connection

Name	Type	Description
count	integer	The number of CIFS connections associated with the CIFS session.
identifier	integer	The connection that is used to open the file.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

session

Name	Type	Description
identifier	integer	Session under which file is opened.

share

Name	Type	Description
mode	string	The share mode used to open the file. The share mode can be a combination of: • r: read mode • w: write mode • d: delete
name	string	CIFS share name where the file resides.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View CIFS active sessions

Protocols CIFS sessions endpoint overview

Overview

ONTAP CIFS sessions `show` functionality is used to provide a list of currently established CIFS sessions with SMB Clients.

Information on the CIFS session

- List all the SMB sessions for SVM and the clients along with volume information on which the clients are using.

Example

Retrieves established sessions information

To retrieve the list of CIFS sessions, use the following API. Note that *return_records=true*.

```
# The API:
GET /protocols/cifs/sessions

# The call:
curl -X GET "https://<cluster-mgmt-
```

```
ip>/api/protocols/cifs/sessions?fields=*&return_timeout=15&return_records=
true" -H "accept: application/json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "a5f65ec0-3550-11ee-93c5-005056ae78de",
      "name": "sti220-vsim-sr050u"
    },
    "svm": {
      "name": "vs0",
      "uuid": "80e795f4-3553-11ee-9f97-005056ae78de"
    },
    "identifier": 10878444899913433000,
    "connection_id": 103985,
    "server_ip": "172.29.212.166",
    "client_ip": "10.249.30.206",
    "authentication": "ntlmv2",
    "user": "example_user",
    "mapped_unix_user": "example_user",
    "open_shares": 1,
    "open_files": 5,
    "open_other": 0,
    "connected_duration": "PT37M53S",
    "idle_duration": "PT3M15S",
    "protocol": "smb3_1",
    "continuous_availability": "unavailable",
    "smb_signing": true,
    "smb_encryption": "unencrypted",
    "connection_count": 1,
    "large_mtu": true,
    "volumes": [
      {
        "name": "root_vs0",
        "uuid": "5015c99b-3554-11ee-9f97-005056ae78de"
      },
      {
        "name": "vol_test",
        "uuid": "84b94bb8-3553-11ee-a3c3-005056ae0dd5"
      }
    ]
  },
  {
    "node": {
```

```
      "uuid": "a5f65ec0-3550-11ee-93c5-005056ae78de",
      "name": "sti220-vsim-sr050u"
    },
    "svm": {
      "name": "vs0",
      "uuid": "80e795f4-3553-11ee-9f97-005056ae78de"
    },
    "identifier": 10878444899913433000,
    "connection_id": 103986,
    "server_ip": "172.29.212.166",
    "client_ip": "10.234.157.109",
    "authentication": "ntlmv2",
    "user": "example_user",
    "mapped_unix_user": "example_user",
    "open_shares": 1,
    "open_files": 1,
    "open_other": 0,
    "connected_duration": "PT15S",
    "idle_duration": "PT5S",
    "protocol": "smb3_1",
    "continuous_availability": "unavailable",
    "smb_signing": false,
    "smb_encryption": "unencrypted",
    "connection_count": 1,
    "large_mtu": true,
    "volumes": [
      {
        "name": "root_vs0",
        "uuid": "84b94bb8-3553-11ee-a3c3-005056ae0dd5"
      }
    ]
  }
],
"num_records": 2
}
```


Retrieving CIFS server configuration details for a specific SVM

```
# The API:
GET
/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_i
d}
```

```
# The call:
curl -X GET "https://<cluster-mgmt-
ip>/api/protocols/cifs/sessions/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-
005056ae78de/10878444899913433090/103985" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE="

# The response:
{
"node": {
  "uuid": "a5f65ec0-3550-11ee-93c5-005056ae78de",
  "name": "sti220-vsim-sr050u"
},
"svm": {
  "uuid": "80e795f4-3553-11ee-9f97-005056ae78de",
  "name": "vs0"
},
"identifier": 10878444899913433000,
"connection_id": 103985,
"server_ip": "172.29.212.166",
"client_ip": "10.249.30.206",
"authentication": "ntlmv2",
"user": "example_user",
"mapped_unix_user": "example_user",
"open_shares": 1,
"open_files": 5,
"open_other": 0,
"connected_duration": "PT50M20S",
"idle_duration": "PT5M41S",
"protocol": "smb3_1",
"continuous_availability": "unavailable",
"smb_signing": true,
"smb_encryption": "unencrypted",
"connection_count": 1,
"large_mtu": true,
"volumes": [
  {
    "name": "root_vs0",
    "uuid": "5015c99b-3554-11ee-9f97-005056ae78de"
  },
  {
    "name": "vol_test",
    "uuid": "84b94bb8-3553-11ee-a3c3-005056ae0dd5"
  }
]
```

```
}
```

Removing all existing CIFS sessions for a specific node on a specific SVM

To delete all the existing CIFS session, pass the identifier and connection ID as zero (0) in the following API. This will delete all of the CIFS sessions for the given SVM on the node.

```
# The API:
DELETE
/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_i
d}

# The call:
curl -X DELETE "https://<cluster-mgmt-
ip>/api/protocols/cifs/sessions/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-005056ae78de/0/0" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
```

Removing all CIFS sessions for a specific connection on a specific node on a specific SVM

To delete a CIFS session, use the following API. This will delete the CIFS sessions for a given SVM on the node.

```
# The API:
DELETE
/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_i
d}

# The call:
curl -X DELETE "https://<cluster-mgmt-
ip>/api/protocols/cifs/sessions/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-005056ae78de/0/103985" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
```

Removing a specific CIFS session for a specific Node on a specific SVM

To delete a specific CIFS session, use the following API. This will delete the specific CIFS session for the given

SVM on the node.

```
# The API:
DELETE
/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_i
d}

# The call:
curl -X DELETE "https://<cluster-mgmt-
ip>/api/protocols/cifs/sessions/a5f65ec0-3550-11ee-93c5-
005056ae78de/80e795f4-3553-11ee-9f97-
005056ae78de/10878444899913433090/103985" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE="
```

Retrieve CIFS session information for all SVMs

GET `/protocols/cifs/sessions`

Introduced In: 9.8

Retrieves the CIFS sessions information for all SVMs.

Related ONTAP commands

- `vserver cifs session show -active-volumes`

Learn more

- DOC /protocols/cifs/sessions

Parameters

Name	Type	In	Required	Description
user	string	query	False	Filter by user
server_ip	string	query	False	Filter by server_ip
smb_encryption	string	query	False	Filter by smb_encryption
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name

Name	Type	In	Required	Description
smb_signing	boolean	query	False	Filter by smb_signing
open_shares	integer	query	False	Filter by open_shares
idle_duration	string	query	False	Filter by idle_duration
open_files	integer	query	False	Filter by open_files
mapped_unix_user	string	query	False	Filter by mapped_unix_user
protocol	string	query	False	Filter by protocol
connection_id	integer	query	False	Filter by connection_id
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
authentication	string	query	False	Filter by authentication
connection_count	integer	query	False	Filter by connection_count
large_mtu	boolean	query	False	Filter by large_mtu
connected_duration	string	query	False	Filter by connected_duration
continuous_availability	string	query	False	Filter by continuous_availability
open_other	integer	query	False	Filter by open_other
volumes.uuid	string	query	False	Filter by volumes.uuid
volumes.name	string	query	False	Filter by volumes.name

Name	Type	In	Required	Description
identifier	integer	query	False	Filter by identifier
client_ip	string	query	False	Filter by client_ip
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_session]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication": "ntlmv2",
      "client_ip": "10.74.7.182",
      "connected_duration": "P4DT84H30M5S",
      "connection_count": 0,
      "connection_id": 22802,
      "continuous_availability": "unavailable",
      "identifier": 4622663542519103507,
      "idle_duration": "P4DT84H30M5S",
      "large_mtu": true,
      "mapped_unix_user": "root",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "open_files": 0,
      "open_other": 0,
      "open_shares": 0,
      "protocol": "smb3_1",
      "server_ip": "10.140.78.248",
      "smb_encryption": "unencrypted",
      "smb_signing": "",
      "svm": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "user": "NBCIFSQA2\\administrator",
      "volumes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volumes

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.8 • x-nullable: true

cifs_session

Name	Type	Description
_links	_links	
authentication	string	SMB authentication over which the client accesses the share. The following values are supported: • none - No authentication • ntlmv1 - Ntlm version 1 mechanism • ntlmv2 - Ntlm version 2 mechanism • kerberos - Kerberos authentication • anonymous - Anonymous mechanism
client_ip	string	Specifies IP address of the client.
connected_duration	string	Specifies an ISO-8601 format of date and time used to retrieve the connected time duration in hours, minutes, and seconds format.
connection_count	integer	A counter used to track requests that are sent to the volumes to the node.

Name	Type	Description
connection_id	integer	A unique 32-bit unsigned number used to represent each SMB session's connection ID.
continuous_availability	string	The level of continuous availability protection provided to the SMB sessions and/or files. • unavailable - Open file is not continuously available. For sessions, it contains one or more open files but none of them are continuously available. • available - open file is continuously available. For sessions, it contains one or more open files and all of them are continuously available. • partial - Sessions only. Contains at least one continuously available open file with other files open but not continuously available.
identifier	integer	A unique 64-bit unsigned number used to represent each SMB session's identifier.
idle_duration	string	Specifies an ISO-8601 format of date and time used to retrieve the idle time duration in hours, minutes, and seconds format.
large_mtu	boolean	Specifies whether the large MTU is enabled or not for an SMB session.
mapped_unix_user	string	Indicated that a mapped UNIX user has logged in.
node	node	
open_files	integer	Number of files the SMB session has opened.

Name	Type	Description
open_other	integer	Number of other files the SMB session has opened.
open_shares	integer	Number of shares the SMB session has opened.
protocol	string	The SMB protocol version over which the client accesses the volumes. The following values are supported: • smb1 - SMB version 1 • smb2 - SMB version 2 • smb2_1 - SMB version 2 minor version 1 • smb3 - SMB version 3 • smb3_1 - SMB version 3 minor version 1
server_ip	string	Specifies the IP address of the SVM.
smb_encryption	string	Indicates an SMB encryption state. The following values are supported: • unencrypted - SMB session is not encrypted • encrypted - SMB session is fully encrypted. SVM level encryption is enabled and encryption occurs for the entire session. • partially_encrypted - SMB session is partially encrypted. Share level encryption is enabled and encryption is initiated when the tree-connect occurs.
smb_signing	boolean	Specifies whether or not SMB signing is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
user	string	Indicates that a Windows user has logged in.
volumes	array[volumes]	A group of volumes, the client is accessing.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete SMB session information for an SVM node

DELETE
`/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_id}`

Introduced In: 9.9

Deletes SMB session information on a node for an SVM.

- To delete the specific SMB session information, pass the relevant SMB session's identifier and connection Id.
- To delete all the SMB session information on specific node and SVM, pass the both SMB session's identifier and connection Id as zero(0)
- To delete all the SMB session information on specific connection, pass the specific SMB session's Identifier value as zero(0).
- To delete all the SMB session information on specific Identifier alone is not allowed.

Related ONTAP commands

- `vserver cifs session close`

Learn more

- DOC /protocols/cifs/sessions

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID.
identifier	integer	path	True	Unique identifier for the SMB session.
connection_id	integer	path	True	Unique identifier for the SMB connection.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655503	The SMB session delete does not allow a connection ID of zero (0).

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SMB session information for an SMB connection in an SVM node

GET `/protocols/cifs/sessions/{node.uuid}/{svm.uuid}/{identifier}/{connection_id}`

Introduced In: 9.8

Retrieves specific SMB session information for a specific SMB connection in a node on an SVM.

Learn more

- DOC /protocols/cifs/sessions

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID.
identifier	integer	path	True	Unique identifier for the SMB session.
connection_id	integer	path	True	Unique identifier for the SMB connection.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication	string	SMB authentication over which the client accesses the share. The following values are supported: • none - No authentication • ntlmv1 - Ntlm version 1 mechanism • ntlmv2 - Ntlm version 2 mechanism • kerberos - Kerberos authentication • anonymous - Anonymous mechanism

Name	Type	Description
client_ip	string	Specifies IP address of the client.
connected_duration	string	Specifies an ISO-8601 format of date and time used to retrieve the connected time duration in hours, minutes, and seconds format.
connection_count	integer	A counter used to track requests that are sent to the volumes to the node.
connection_id	integer	A unique 32-bit unsigned number used to represent each SMB session's connection ID.
continuous_availability	string	The level of continuous availability protection provided to the SMB sessions and/or files. • unavailable - Open file is not continuously available. For sessions, it contains one or more open files but none of them are continuously available. • available - open file is continuously available. For sessions, it contains one or more open files and all of them are continuously available. • partial - Sessions only. Contains at least one continuously available open file with other files open but not continuously available.
identifier	integer	A unique 64-bit unsigned number used to represent each SMB session's identifier.
idle_duration	string	Specifies an ISO-8601 format of date and time used to retrieve the idle time duration in hours, minutes, and seconds format.
large_mtu	boolean	Specifies whether the large MTU is enabled or not for an SMB session.

Name	Type	Description
mapped_unix_user	string	Indicated that a mapped UNIX user has logged in.
node	node	
open_files	integer	Number of files the SMB session has opened.
open_other	integer	Number of other files the SMB session has opened.
open_shares	integer	Number of shares the SMB session has opened.
protocol	string	The SMB protocol version over which the client accesses the volumes. The following values are supported: • smb1 - SMB version 1 • smb2 - SMB version 2 • smb2_1 - SMB version 2 minor version 1 • smb3 - SMB version 3 • smb3_1 - SMB version 3 minor version 1
server_ip	string	Specifies the IP address of the SVM.
smb_encryption	string	Indicates an SMB encryption state. The following values are supported: • unencrypted - SMB session is not encrypted • encrypted - SMB session is fully encrypted. SVM level encryption is enabled and encryption occurs for the entire session. • partially_encrypted - SMB session is partially encrypted. Share level encryption is enabled and encryption is initiated when the tree-connect occurs.

Name	Type	Description
smb_signing	boolean	Specifies whether or not SMB signing is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
user	string	Indicates that a Windows user has logged in.
volumes	array[volumes]	A group of volumes, the client is accessing.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": "ntlmv2",
  "client_ip": "10.74.7.182",
  "connected_duration": "P4DT84H30M5S",
  "connection_count": 0,
  "connection_id": 22802,
  "continuous_availability": "unavailable",
  "identifier": 4622663542519103507,
  "idle_duration": "P4DT84H30M5S",
  "large_mtu": true,
  "mapped_unix_user": "root",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "open_files": 0,
  "open_other": 0,
  "open_shares": 0,
  "protocol": "smb3_1",
  "server_ip": "10.140.78.248",
  "smb_encryption": "unencrypted",
  "smb_signing": "",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "user": "NBCIFSQA2\\administrator",
  "volumes": [
    {
```

```
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volumes

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.8 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update shadow copy information

Protocols CIFS shadow-copies endpoint overview

Microsoft Remote Volume Shadow Copy Services (VSS) is an extension of the existing Microsoft VSS infrastructure. Previously, VSS could be used for backup services only for data stored on the local disk. This limited the use of VSS to applications that stored data either on a local disk or on SAN-based storage. With Remote VSS, Microsoft has extended the VSS infrastructure to support the shadow copying of SMB shares. Server applications, such as, Hyper-V are now storing VHD files on SMB file shares. With these new extensions, it is possible to take application consistent shadow copies for virtual machines that store data and configuration files on shares.

Retrieving Shadow copy sets for all SVMs

```
# The API:
GET /api/protocols/cifs/shadowcopy-sets

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shadowcopy-
sets?fields=*&return_records=true&return_timeout=15" -H  "accept:
application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE="

# The Response:
{
"records": [
  {
    "uuid": "27ed1b79-97f6-11ec-8ad1-0050568e57be",
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "keep_snapshots": true
  },
  {
    "uuid": "388be551-97f6-11ec-8ad1-0050568e57be",
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "keep_snapshots": false
  },
  {
    "uuid": "525104ef-9f96-11ec-82fd-0050568e57be",
    "svm": {
      "uuid": "fdb5bd8b-9498-11ec-9f9d-0050568e57be",
      "name": "vs2"
    },
    "keep_snapshots": false
  },
  {
    "uuid": "66f8f723-9f96-11ec-82fd-0050568e57be",
    "svm": {
      "uuid": "fdb5bd8b-9498-11ec-9f9d-0050568e57be",
      "name": "vs2"
    },
    "keep_snapshots": true
```

```
  }
],
"num_records": 4
}
```

Retrieving information for a specific shadow copy set

```
# The API:
GET /api/protocols/cifs/shadowcopy-sets/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shadowcopy-
sets/525104ef-9f96-11ec-82fd-0050568e57be?fields=*" -H  "accept:
application/json"

# The Response:
{
"uuid": "525104ef-9f96-11ec-82fd-0050568e57be",
"svm": {
  "uuid": "fdb5bd8b-9498-11ec-9f9d-0050568e57be",
  "name": "vs2"
},
"keep_snapshots": false
}
```

Updating the keep-snapshot property of a specific shadow copy set

```
# The API:
GET /api/protocols/cifs/shadowcopy-sets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/shadowcopy-
sets/525104ef-9f96-11ec-82fd-0050568e57be" -H  "accept: application/json"
-H  "Content-Type: application/json" -d "{  \"keep_snapshots\": true}"
```

Retrieving shadow copy information for all SVMs

```
# The API:
GET /api/protocols/cifs/shadow-copies

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shadow-
copies?fields=*&return_records=true&return_timeout=15" -H  "accept:
application/json"

# The Response:
{
"records": [
  {
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "shadowcopy_set": {
      "uuid": "9169cd4a-a421-11ec-b82e-0050568e57be"
    },
    "uuid": "919fbc80-a421-11ec-b82e-0050568e57be",
    "share": {
      "name": "sh1"
    },
    "client_uuid": "918536b7-a421-11ec-b82e-0050568e57be",
    "volume": {
      "uuid": "e117c8f6-9498-11ec-9f9d-0050568e57be",
      "name": "vol1"
    }
  },
  {
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "shadowcopy_set": {
      "uuid": "9169cd4a-a421-11ec-b82e-0050568e57be"
    },
    "uuid": "91ac5a5f-a421-11ec-b82e-0050568e57be",
    "share": {
      "name": "sh2"
    },
    "client_uuid": "91a9252b-a421-11ec-b82e-0050568e57be",
```

```
    "volume": {
      "uuid": "e117c8f6-9498-11ec-9f9d-0050568e57be",
      "name": "vol1"
    }
  },
  {
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "shadowcopy_set": {
      "uuid": "9169cd4a-a421-11ec-b82e-0050568e57be"
    },
    "uuid": "91b14098-a421-11ec-b82e-0050568e57be",
    "share": {
      "name": "sh3"
    },
    "client_uuid": "91adfc85-a421-11ec-b82e-0050568e57be",
    "volume": {
      "uuid": "e117c8f6-9498-11ec-9f9d-0050568e57be",
      "name": "vol1"
    }
  },
  {
    "svm": {
      "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
      "name": "vs1"
    },
    "shadowcopy_set": {
      "uuid": "9169cd4a-a421-11ec-b82e-0050568e57be"
    },
    "uuid": "91b63309-a421-11ec-b82e-0050568e57be",
    "share": {
      "name": "sh4"
    },
    "client_uuid": "91b2f817-a421-11ec-b82e-0050568e57be",
    "volume": {
      "uuid": "e117c8f6-9498-11ec-9f9d-0050568e57be",
      "name": "vol1"
    }
  }
],
"num_records": 4
}
```

Retrieving information for a specific shadow copy

```
# The API:
GET /api/protocols/cifs/shadow-copies/{client_uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shadow-copies/91adfc85-
a421-11ec-b82e-0050568e57be?fields=*" -H  "accept: application/json"

# The Response:
{
"svm": {
  "uuid": "dfb8e00d-9498-11ec-9f9d-0050568e57be",
  "name": "vs1"
},
"shadowcopy_set": {
  "uuid": "9169cd4a-a421-11ec-b82e-0050568e57be"
},
"uuid": "91b14098-a421-11ec-b82e-0050568e57be",
"share": {
  "name": "sh3"
},
"client_uuid": "91adfc85-a421-11ec-b82e-0050568e57be",
"volume": {
  "uuid": "e117c8f6-9498-11ec-9f9d-0050568e57be",
  "name": "vol1"
}
}
```

Updating the list of files to be shadowcopied in a particular share

Use this endpoint to update the list of files to be shadow copied in a particular share. Set "restore" field as false to perform this operation.

```
# The API:
PATCH /protocols/cifs/shadow-copies/{client_uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/shadow-
copies/91adfc85-a421-11ec-b82e-0050568e57be?restore=false" -H  "accept:
application/json" -d "{  \"files\": [    \"/vhd1\",    \"/vhd2\"  ]}"
```

Requesting the storage system to restore a directory

You set restore field to true to perform this operation. Only users with the security login role "vsadmin" can perform the operation.

```
# The API:
PATCH /protocols/cifs/shadow-copies?restore=true

# The call:
PATCH "api/protocols/cifs/shadow-copies?restore=true" -d "{
\"destination_dir\": \"/dir2\",  \"source_dir\": \"/src_dir\",
\"volume\": {    \"name\": \"test_vol\"  },  \"with_content\": false}"
```

Retrieve shadow copies

GET `/protocols/cifs/shadow-copies`

Introduced In: 9.11

Retrieves Shadowcopies

Related ONTAP commands

- `vserver cifs shadowcopy show-shares`

Learn more

- DOC /protocols/cifs/shadow-copies

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
client_uuid	string	query	False	Filter by client_uuid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
files	string	query	False	Filter by files
share.name	string	query	False	Filter by share.name
shadowcopy_set.uuid	string	query	False	Filter by shadowcopy_set.uuid
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False
Limit the number of records returned.	return_records	boolean	query	False
The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1	return_timeout	integer	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records

Name	Type	Description
records	array[shadowcopy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "client_uuid": "abc13450-1f19-40ba-9b82-ebf277517e7e",
      "destination_dir": "/dir2",
      "files": [
        "/vhd1",
        "/vhd2"
      ],
      "shadowcopy_set": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "5f4e19f3-5e2d-11ec-8766-005056a7c134"
      },
      "share": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "sh1"
      },
      "source_dir": "/dir1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "fef32805-1f19-40ba-9b82-ebf277517e7e",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

self_link

Name	Type	Description
self	href	

shadowcopy_set

Name	Type	Description
_links	self_link	
uuid	string	

share

Name	Type	Description
_links	_links	
name	string	Share name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

The name of the volume where the source and destination directories reside.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

shadowcopy

Name	Type	Description
_links	_links	
client_uuid	string	The universally-unique identifier of the client's shadow copy.
destination_dir	string	The path of the destination directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.

Name	Type	Description
files	array[string]	The list of files to shadow copy in the share. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the share.
shadowcopy_set	shadowcopy_set	
share	share	
source_dir	string	The path of the source directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy.
volume	volume	The name of the volume where the source and destination directories reside.
with_content	boolean	Specifies what needs to be restored. False specifies the directory only. True indicates the directory and its content.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a shadow copy

GET `/protocols/cifs/shadow-copies/{client_uuid}`

Introduced In: 9.11

Retrieves a Shadowcopy

Related ONTAP commands

- `vserver cifs shadowcopy show-shares`

Learn more

- DOC /protocols/cifs/shadow-copies

Parameters

Name	Type	In	Required	Description
client_uuid	string	path	True	client shadowcopy ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
client_uuid	string	The universally-unique identifier of the client's shadow copy.

Name	Type	Description
destination_dir	string	The path of the destination directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
files	array[string]	The list of files to shadow copy in the share. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the share.
shadowcopy_set	shadowcopy_set	
share	share	
source_dir	string	The path of the source directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy.
volume	volume	The name of the volume where the source and destination directories reside.
with_content	boolean	Specifies what needs to be restored. False specifies the directory only. True indicates the directory and its content.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "client_uuid": "abc13450-1f19-40ba-9b82-ebf277517e7e",
  "destination_dir": "/dir2",
  "files": [
    "/vhd1",
    "/vhd2"
  ],
  "shadowcopy_set": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "5f4e19f3-5e2d-11ec-8766-005056a7c134"
  },
  "share": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "sh1"
  },
  "source_dir": "/dir1",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "fef32805-1f19-40ba-9b82-ebf277517e7e",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
```

```
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

self_link

Name	Type	Description
self	href	

shadowcopy_set

Name	Type	Description
_links	self_link	
uuid	string	

share

Name	Type	Description
_links	_links	
name	string	Share name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

The name of the volume where the source and destination directories reside.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a shadow copy

PATCH `/protocols/cifs/shadow-copies/{client_uuid}`

Introduced In: 9.11

Specify list Files to be added as a part of Shadowcopy creation

Learn more

- DOC /protocols/cifs/shadow-copies

Parameters

Name	Type	In	Required	Description
client_uuid	string	path	True	client shadowcopy ID
restore	boolean	query	False	Indicates whether to restore a directory

Request Body

Name	Type	Description
client_uuid	string	The universally-unique identifier of the client's shadow copy.
destination_dir	string	The path of the destination directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
files	array[string]	The list of files to shadow copy in the share. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the share.
shadowcopy_set	shadowcopy_set	
share	share	
source_dir	string	The path of the source directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
uuid	string	The universally-unique identifier of the storage's shadow copy.
volume	volume	The name of the volume where the source and destination directories reside.
with_content	boolean	Specifies what needs to be restored. False specifies the directory only. True indicates the directory and its content.

Example request

```
{
  "client_uuid": "abc13450-1f19-40ba-9b82-ebf277517e7e",
  "destination_dir": "/dir2",
  "files": [
    "/vhd1",
    "/vhd2"
  ],
  "shadowcopy_set": {
    "uuid": "5f4e19f3-5e2d-11ec-8766-005056a7c134"
  },
  "share": {
    "name": "sh1"
  },
  "source_dir": "/dir1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "fef32805-1f19-40ba-9b82-ebf277517e7e",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
storage_shadowcopy_set_uuid	string	The universally-unique identifier of the storage's shadow copy set.
storage_shadowcopy_uuid	string	The universally-unique identifier of the storage's shadow copy.

Example response

```
{
  "storage_shadowcopy_set_uuid": "f8328660-00e6-11e6-80d9-
005056bd65a9",
  "storage_shadowcopy_uuid": "fef32805-1f19-40ba-9b82-ebf277517e7e"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	The 'svm' field is not supported in the body of a PATCH request.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

self_link

shadowcopy_set

Name	Type	Description
uuid	string	

share

Name	Type	Description
name	string	Share name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

The name of the volume where the source and destination directories reside.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

shadowcopy

Name	Type	Description
client_uuid	string	The universally-unique identifier of the client's shadow copy.
destination_dir	string	The path of the destination directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
files	array[string]	The list of files to shadow copy in the share. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the share.
shadowcopy_set	shadowcopy_set	
share	share	
source_dir	string	The path of the source directory. The path is in UTF8 and uses forward slash as a directory separator. The path is relative to the root of the volume.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy.

Name	Type	Description
volume	volume	The name of the volume where the source and destination directories reside.
with_content	boolean	Specifies what needs to be restored. False specifies the directory only. True indicates the directory and its content.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve shadow copy sets

GET `/protocols/cifs/shadowcopy-sets`

Introduced In: 9.11

Retrieves Shadowcopy Sets.

Related ONTAP commands

- `vserver cifs shadowcopy show-sets`

Learn more

- DOC /protocols/cifs/shadow-copies

Parameters

Name	Type	In	Required	Description
keep_snapshots	boolean	query	False	Filter by keep_snapshots
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
uuid	string	query	False	Filter by uuid
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False
Limit the number of records returned.	return_records	boolean	query	False
The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1	return_timeout	integer	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[shadowcopy_set]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "keep_snapshots": 1,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "f8328660-00e6-11e6-80d9-005056bd65a9"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

shadowcopy_set

Name	Type	Description
keep_snapshots	boolean	Request the storage system to keep the snapshot copies taken as a part of the shadow copy set creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy set.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a shadow copy set

GET `/protocols/cifs/shadowcopy-sets/{uuid}`

Introduced In: 9.11

Retrieves a Shadowcopy set

Related ONTAP commands

- `vserver cifs shadowcopy show-sets`

Learn more

- DOC /protocols/cifs/shadow-copies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Storage shadowcopy set ID.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
keep_snapshots	boolean	Request the storage system to keep the snapshot copies taken as a part of the shadow copy set creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy set.

Example response

```
{
  "keep_snapshots": 1,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "f8328660-00e6-11e6-80d9-005056bd65a9"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a shadow copy set

PATCH `/protocols/cifs/shadowcopy-sets/{uuid}`

Introduced In: 9.11

Updates a Shadowcopy set

Learn more

- DOC /protocols/cifs/shadowcopy

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Storage shadowcopy set ID.

Request Body

Name	Type	Description
keep_snapshots	boolean	Request the storage system to keep the snapshot copies taken as a part of the shadow copy set creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy set.

Example request

```
{
  "keep_snapshots": 1,
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "f8328660-00e6-11e6-80d9-005056bd65a9"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	The 'svm' field is not supported in the body of a PATCH request.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

shadowcopy_set

Name	Type	Description
keep_snapshots	boolean	Request the storage system to keep the snapshot copies taken as a part of the shadow copy set creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The universally-unique identifier of the storage's shadow copy set.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage CIFS shares

Protocols CIFS shares endpoint overview

Overview

Before any users or applications can access data on the CIFS server over SMB, a CIFS share must be created with sufficient share permissions. CIFS share is a named access point in a volume which is tied to the CIFS server on the SVM. Before creating a CIFS share make sure that the path is valid within the scope of the SVM and that it is reachable.

Permissions can be assigned to this newly created share by specifying the 'acls' field. When a CIFS share is created, ONTAP creates a default ACL for this share with 'Full-Control' permissions for an 'Everyone' user.

Examples

Creating a CIFS share

To create a CIFS share for a CIFS server, use the following API. Note the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/cifs/shares

# The call:
curl -X POST "https://<mgmt-
ip>/api/protocols/cifs/shares?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"access_based_enumeration\": false, \"acls\": [ { \"permission\":
\"no_access\", \"type\": \"unix_user\", \"user_or_group\": \"root\" } ],
\"change_notify\": true, \"comment\": \"HR Department Share\",
\"encryption\": false, \"home_directory\": false, \"name\": \"TEST\",
\"oplocks\": true, \"no_strict_security\": true, \"path\": \"/\", \"svm\":
{ \"name\": \"vs1\", \"uuid\": \"6d8e8870-8753-11eb-8d86-0050568ea61a\" },
\"unix_symlink\": \"local\", \"show_snapshot\": \"true\",
```

```
\"continuously_available\": \"false\", \"namespace_caching\": \"true\",
\"allow_unencrypted_access\": \"false\", \"file_umask\": \"025\",
\"dir_umask\": \"026\", \"offline_files\": \"documents\",
\"vscan_profile\": \"standard\", \"force_group_for_create\": \"root\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
      "name": "vs1"
    },
    "name": "TEST",
    "path": "/",
    "comment": "HR Department Share",
    "home_directory": false,
    "oplocks": true,
    "access_based_enumeration": false,
    "change_notify": true,
    "encryption": false,
    "unix_symlink": "local",
    "acls": [
      {
        "user_or_group": "root",
        "type": "unix_user",
        "permission": "no_access",
        "win_sid_unix_id": "0"
      }
    ],
    "no_strict_security": true,
    "show_snapshot": true,
    "continuously_available": false,
    "namespace_caching": true,
    "allow_unencrypted_access": false,
    "file_umask": "25",
    "dir_umask": "26",
    "offline_files": "documents",
    "vscan_profile": "standard",
    "force_group_for_create": "root"
  }
]
}
```

Retrieving CIFS Shares for all SVMs in the cluster

```
# The API:
GET /api/protocols/cifs/shares

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/cifs/shares?fields=*&return_records=true&return_timeout=
15" -H "accept application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6d8e8870-8753-11eb-8d86-0050568ea61a"
        }
      }
    },
    "name": "c$",
    "path": "/",
    "home_directory": false,
    "oplocks": true,
    "access_based_enumeration": false,
    "change_notify": true,
    "encryption": false,
    "unix_symlink": "local",
    "acls": [
      {
        "user_or_group": "BUILTIN\\Administrators",
        "type": "windows",
        "permission": "full_control",
        "win_sid_unix_id": "S-1-1-0"
      }
    ],
    "volume": {
      "name": "vol1",
      "uuid": "6f4fb33a-8753-11eb-8d86-0050568ea61a"
    },
    "show_snapshot": false,
```

```
    "cache_attribute": false,
    "continuously_available": false,
    "namespace_caching": false,
    "allow_unencrypted_access": true,
    "vscan_profile": "standard",
    "_links": {
      "self": {
        "href": "/api/protocols/cifs/shares/6d8e8870-8753-11eb-8d86-
0050568ea61a/c%24"
      }
    }
  },
  {
    "svm": {
      "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6d8e8870-8753-11eb-8d86-0050568ea61a"
        }
      }
    },
    "name": "ipc$",
    "path": "/",
    "home_directory": false,
    "oplocks": false,
    "access_based_enumeration": false,
    "change_notify": false,
    "encryption": false,
    "volume": {
      "name": "vol1",
      "uuid": "6f4fb33a-8753-11eb-8d86-0050568ea61a"
    },
    "show_snapshot": false,
    "cache_attribute": false,
    "continuously_available": false,
    "namespace_caching": false,
    "allow_unencrypted_access": false,
    "vscan_profile": "standard",
    "_links": {
      "self": {
        "href": "/api/protocols/cifs/shares/6d8e8870-8753-11eb-8d86-
0050568ea61a/ipc%24"
      }
    }
  },
```

```
  {
    "svm": {
      "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6d8e8870-8753-11eb-8d86-0050568ea61a"
        }
      }
    },
    "name": "TEST",
    "path": "/",
    "comment": "HR Department Share",
    "home_directory": false,
    "oplocks": true,
    "access_based_enumeration": false,
    "change_notify": true,
    "encryption": false,
    "unix_symlink": "local",
    "acls": [
      {
        "user_or_group": "Everyone",
        "type": "windows",
        "permission": "full_control",
        "win_sid_unix_id": "S-1-1-0"
      },
      {
        "user_or_group": "root",
        "type": "unix_user",
        "permission": "no_access",
        "win_sid_unix_id": "0"
      }
    ],
    "volume": {
      "name": "vol1",
      "uuid": "6f4fb33a-8753-11eb-8d86-0050568ea61a"
    },
    "no_strict_security": true,
    "show_snapshot": true,
    "cache_attribute": true,
    "continuously_available": false,
    "namespace_caching": true,
    "allow_unencrypted_access": true,
    "file_umask": "25",
    "dir_umask": "26",
    "offline_files": "documents",
```

```
    "vscan_profile": "standard",
    "force_group_for_create": "root",
    "_links": {
      "self": {
        "href": "/api/protocols/cifs/shares/6d8e8870-8753-11eb-8d86-
0050568ea61a/TEST"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href":
"/api/protocols/cifs/shares?fields=*&return_records=true&return_timeout=15
"
  }
}
}
```

Retrieving all CIFS Shares for all SVMs in the cluster for which the acls are configured for a "root" user

```
# The API:
GET /api/protocols/cifs/shares

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/cifs/shares?acls.user_or_group=root&fields=*&return_reco
rds=true&return_timeout=15" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
      "name": "vs1"
    },
    "name": "TEST",
    "path": "/",
    "comment": "HR Department Share",
    "home_directory": false,
```

```
    "oplocks": true,
    "access_based_enumeration": false,
    "change_notify": true,
    "encryption": false,
    "unix_symlink": "local",
    "acls": [
      {
        "user_or_group": "Everyone",
        "type": "windows",
        "permission": "full_control",
        "win_sid_unix_id": "S-1-1-0"
      },
      {
        "user_or_group": "root",
        "type": "unix_user",
        "permission": "no_access",
        "win_sid_unix_id": "0"
      }
    ],
    "volume": {
      "name": "vol1",
      "uuid": "6f4fb33a-8753-11eb-8d86-0050568ea61a"
    },
    "no_strict_security": true,
    "show_snapshot": true,
    "cache_attribute": true,
    "continuously_available": false,
    "namespace_caching": true,
    "allow_unencrypted_access": true,
    "file_umask": "25",
    "dir_umask": "26",
    "offline_files": "documents",
    "vscan_profile": "standard",
    "force_group_for_create": "root"
  }
],
"num_records": 1
}
```


Retrieving a specific CIFS share configuration for an SVM

The configuration being returned is identified by the UUID of its SVM and the name of the share.

```
# The API:
GET /api/protocols/cifs/shares/{svm.uuid}/{name}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shares/6d8e8870-8753-
11eb-8d86-0050568ea61a/TEST" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "6d8e8870-8753-11eb-8d86-0050568ea61a",
  "name": "vs1"
},
"name": "TEST",
"path": "/",
"comment": "HR Department Share",
"home_directory": false,
"oplocks": true,
"access_based_enumeration": false,
"change_notify": true,
"encryption": false,
"unix_symlink": "local",
"acls": [
  {
    "user_or_group": "Everyone",
    "type": "windows",
    "permission": "full_control",
    "win_sid_unix_id": "S-1-1-0"
  },
  {
    "user_or_group": "root",
    "type": "unix_user",
    "permission": "no_access",
    "win_sid_unix_id": "0"
  }
],
"volume": {
  "name": "vol1",
  "uuid": "6f4fb33a-8753-11eb-8d86-0050568ea61a"
},
"no_strict_security": true,
"show_snapshot": true,
"cache_attribute": true,
"continuously_available": false,
"namespace_caching": true,
"allow_unencrypted_access": true,
"file_umask": "25",
"dir_umask": "26",
"offline_files": "documents",
```

```
"vscan_profile": "standard",
"force_group_for_create": "root"
}
```

Updating a specific CIFS share for an SVM

The CIFS share being modified is identified by the UUID of its SVM and the CIFS share name. The CIFS share ACLs cannot be modified with this API.

```
# The API:
PATCH /api/protocols/cifs/shares/{svm.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/shares/6d8e8870-8753-
11eb-8d86-0050568ea61a/TEST" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"access_based_enumeration\": true,
\"change_notify\": true, \"comment\": \"HR Department Share\",
\"encryption\": false, \"oplocks\": true, \"no_strict_security\": true,
\"path\": \"/\", \"unix_symlink\": \"widelink\", \"show_snapshot\":
\"false\", \"continuously_available\": \"true\", \"namespace_caching\":
\"false\", \"allow_unencrypted_access\": \"true\", \"file_umask\":
\"022\", \"dir_umask\": \"022\", \"offline_files\": \"programs\",
\"vscan_profile\": \"no_scan\", \"force_group_for_create\": \"root\"}"
```

Removing a specific CIFS share for an SVM

The CIFS share being removed is identified by the UUID of its SVM and the CIFS share name.

```
# The API:
DELETE /api/protocols/cifs/shares/{svm.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/shares/6d8e8870-8753-
11eb-8d86-0050568ea61a/test" -H "accept: application/json"
```

Retrieve CIFS shares

GET `/protocols/cifs/shares`

Introduced In: 9.6

Retrieves CIFS shares.

Related ONTAP commands

- `vserver cifs share show`
- `vserver cifs share properties show`

Learn more

- DOC /protocols/cifs/shares

Parameters

Name	Type	In	Required	Description
file_umask	string	query	False	Filter by file_umask • Introduced in: 9.10
max_connections_per_share	integer	query	False	Filter by max_connections_per_share • Introduced in: 9.14
oplocks	boolean	query	False	Filter by oplocks
namespace_caching	boolean	query	False	Filter by namespace_caching • Introduced in: 9.10
continuously_available	boolean	query	False	Filter by continuously_available • Introduced in: 9.10
dir_umask	string	query	False	Filter by dir_umask • Introduced in: 9.10
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 1

Name	Type	In	Required	Description
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
vscan_profile	string	query	False	Filter by vscan_profile • Introduced in: 9.10
force_group_for_create	string	query	False	Filter by force_group_for_create • Introduced in: 9.10
encryption	boolean	query	False	Filter by encryption
attribute_cache	boolean	query	False	Filter by attribute_cache • Introduced in: 9.14
access_based_enumeration	boolean	query	False	Filter by access_based_enumeration
name	string	query	False	Filter by name • maxLength: 80 • minLength: 1
browsable	boolean	query	False	Filter by browsable • Introduced in: 9.13
acls.type	string	query	False	Filter by acls.type
acls.permission	string	query	False	Filter by acls.permission
acls.user_or_group	string	query	False	Filter by acls.user_or_group

Name	Type	In	Required	Description
acls.win_sid_unix_id	string	query	False	Filter by acls.win_sid_unix_id • Introduced in: 9.16
no_strict_security	boolean	query	False	Filter by no_strict_security • Introduced in: 9.9
unix_symlink	string	query	False	Filter by unix_symlink
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
change_notify	boolean	query	False	Filter by change_notify
path	string	query	False	Filter by path • maxLength: 256 • minLength: 1
show_snapshot	boolean	query	False	Filter by show_snapshot • Introduced in: 9.10
show_previous_versions	boolean	query	False	Filter by show_previous_versions • Introduced in: 9.13
offline_files	string	query	False	Filter by offline_files • Introduced in: 9.10
home_directory	boolean	query	False	Filter by home_directory

Name	Type	In	Required	Description
allow_unencrypted_access	boolean	query	False	Filter by allow_unencrypted_access • Introduced in: 9.11
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_share]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "acls": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "permission": "string",
          "type": "string",
          "user_or_group": "ENGDOMAIN\\ad_user",
          "win_sid_unix_id": "string"
        }
      ],
      "comment": "HR Department Share",
      "dir_umask": "21",
      "file_umask": "21",
      "force_group_for_create": "string",
      "name": "HR_SHARE",
      "offline_files": "string",
      "path": "/volume_1/eng_vol/",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
```

```
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "unix_symlink": "string",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      },
      "vscan_profile": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
_links	_links	
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access

Name	Type	Description
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.
win_sid_unix_id	string	Windows SID/UNIX ID depending on access-control type.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
_links	_links	
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.

Name	Type	Description
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	string	File Mode Creation Mask to be viewed as an octal number.
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.

Name	Type	Description
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
max_connections_per_share	integer	Maximum number of tree connections on share.

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create a CIFS share

POST `/protocols/cifs/shares`

Introduced In: 9.6

Creates a CIFS share.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the CIFS share.
- `name` - Name of the CIFS share.
- `path` - Path in the owning SVM namespace that is shared through this share.

Recommended optional properties

- `comment` - Optionally choose to add a text comment of up to 256 characters about the CIFS share.
- `acls` - Optionally choose to add share permissions that users and groups have on the CIFS share.

Default property values

If not specified in POST, the following default property values are assigned:

- `home_directory` - *false*
- `oplocks` - *true*
- `access_based_enumeration` - *false*
- `change_notify` - *true*
- `encryption` - *false*
- `unix_symlink` - *local*

Related ONTAP commands

- `vserver cifs share create`
- `vserver cifs share properties add`
- `vserver cifs share access-control create`

Learn more

- DOC /protocols/cifs/shares

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.

Name	Type	Description
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	string	File Mode Creation Mask to be viewed as an octal number.
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.

Name	Type	Description
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
max_connections_per_share	integer	Maximum number of tree connections on share.
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.

Name	Type	Description
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.

Name	Type	Description
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	

Name	Type	Description
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

Example request

```
{
  "acls": [
    {
      "permission": "string",
      "type": "string",
      "user_or_group": "ENGDOMAIN\\ad_user"
    }
  ],
  "comment": "HR Department Share",
  "dir_umask": "21",
  "file_umask": "21",
  "force_group_for_create": "string",
  "name": "HR_SHARE",
  "offline_files": "string",
  "path": "/volume_1/eng_vol/",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_symlink": "string",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  },
  "vscan_profile": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

Error Code	Description
655628	CIFS Share Creation with property 'SMB_ENCRYPTION' failed because the CIFS server does not support SMB3.0
655551	CIFS Share Creation failed because the specified path does not exist
655577	The CIFS share name cannot be more than 80 characters long
655399	Failed to create CIFS share. The CIFS server does not exist for specified SVM
656422	Failed to create the home directory share because the directory shares must specify a path relative to one or more home directory search paths
656423	Failed to create CIFS share. The Shares must define an absolute share path
656424	Failed to create CIFS the administrator share 'c$' because you are not permitted to created any admin shares
656486	Failed to create CIFS share because the share cannot be made continuously available for FlexCache volumes.
655625	Failed to create CIFS share. The Shares path is not a valid file-type for CIFS share
656426	CIFS Share Creation failed because the share name is invalid
655655	no-strict-security should be set to true only if unix_symlink is configured as "local" or "widelink"
655394	Failed to create CIFS share because share cannot be made continuously available unless running SMB3 or later.
4849678	Failed to create CIFS share because the specified UNIX group does not exist
655622	Invalid value for parameter {max-connections-per-share}. Maximum connections on CIFS share {name} must be between 1 to 4294967295.
655446	Failed to resolve the security identifier (SID) for the account named {account_name}. Reason: {Reason for failure}.
2621706	The specified SVM UUID is incorrect for the specified SVM name

See Definitions

href

Name	Type	Description
href	string	

_links

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	

Name	Type	Description
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.

Name	Type	Description
file_umask	string	File Mode Creation Mask to be viewed as an octal number.
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

Name	Type	Description
max_connections_per_share	integer	Maximum number of tree connections on share.
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.

Name	Type	Description
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete a CIFS share

DELETE `/protocols/cifs/shares/{svm.uuid}/{name}`

Introduced In: 9.6

Deletes a CIFS share.

Related ONTAP commands

- `vserver cifs share delete`

Learn more

- DOC /protocols/cifs/shares

Parameters

Name	Type	In	Required	Description
name	string	path	True	Share Name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655393	Standard admin shares cannot be removed

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a CIFS share

GET `/protocols/cifs/shares/{svm.uuid}/{name}`

Introduced In: 9.6

Retrieves a CIFS share.

Related ONTAP commands

- `vserver cifs share show`
- `vserver cifs share properties show`

Learn more

- DOC /protocols/cifs/shares

Parameters

Name	Type	In	Required	Description
name	string	path	True	Share Name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
acls	array[acls]	

Name	Type	Description
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	string	File Mode Creation Mask to be viewed as an octal number.

Name	Type	Description
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.
home_directory	boolean	Specifies whether or not the share is a home directory share, where the share and path names are dynamic. ONTAP home directory functionality automatically offer each user a dynamic share to their home directory without creating an individual SMB share for each user. The ONTAP CIFS home directory feature enable us to configure a share that maps to different directories based on the user that connects to it. Instead of creating a separate shares for each user, a single share with a home directory parameters can be created. In a home directory share, ONTAP dynamically generates the share-name and share-path by substituting %w, %u, and %d variables with the corresponding Windows user name, UNIX user name, and domain name, respectively. • Default value: 1 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
max_connections_per_share	integer	Maximum number of tree connections on share.

Name	Type	Description
name	string	Specifies the name of the CIFS share that you want to create. If this is a home directory share then the share name includes the pattern as %w (Windows user name), %u (UNIX user name) and %d (Windows domain name) variables in any combination with this parameter to generate shares dynamically.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.

Name	Type	Description
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	

Name	Type	Description
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "acls": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "permission": "string",
      "type": "string",
      "user_or_group": "ENGDOMAIN\\ad_user",
      "win_sid_unix_id": "string"
    }
  ],
  "comment": "HR Department Share",
  "dir_umask": "21",
  "file_umask": "21",
  "force_group_for_create": "string",
  "name": "HR_SHARE",
  "offline_files": "string",
  "path": "/volume_1/eng_vol/",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_symlink": "string",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
```

```
  },
  "vscan_profile": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
_links	_links	
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

Name	Type	Description
win_sid_unix_id	string	Windows SID/UNIX ID depending on access-control type.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a CIFS share

PATCH `/protocols/cifs/shares/{svm.uuid}/{name}`

Introduced In: 9.6

Updates a CIFS share.

Related ONTAP commands

- `vserver cifs share modify`
- `vserver cifs share properties add`
- `vserver cifs share properties remove`

Learn more

- DOC /protocols/cifs/shares

Parameters

Name	Type	In	Required	Description
name	string	path	True	Share Name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.

Name	Type	Description
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	string	File Mode Creation Mask to be viewed as an octal number.
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.
max_connections_per_share	integer	Maximum number of tree connections on share.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.

Name	Type	Description
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.

Name	Type	Description
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	

Name	Type	Description
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

Example request

```
{
  "comment": "HR Department Share",
  "dir_umask": "21",
  "file_umask": "21",
  "force_group_for_create": "string",
  "home_directory": true,
  "offline_files": "string",
  "path": "/volume_1/eng_vol/",
  "unix_symlink": "string",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  },
  "vscan_profile": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655628	'SMB_ENCRYPTION' property cannot be set on CIFS share because the CIFS server does not support SMB3.0
655551	CIFS Share modification failed because the specified path does not exist
655620	Cannot set symlink properties for admin shares
656420	Cannot modify the standard share ipc$
656421	Cannot modify the standard share admin$
656422	Failed to modify the home directory share because the directory shares must specify a path relative to one or more home directory search paths
656423	Failed to modify CIFS share. The Shares must define an absolute share path
656425	Failed to modify the CIFS share because the path for an administrative share cannot be modified
656486	Failed to modify CIFS share because the share cannot be made continuously available for FlexCache volumes.
655395	Failed to modify the CIFS share because share cannot be made continuously available unless running SMB3 or later.
4849678	Failed to modify the CIFS share because the specified UNIX group does not exist
655622	Invalid value for parameter {max-connections-per-share}. Maximum connections on CIFS share {name} must be between 1 to 4294967295.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

acls

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

cifs_share

CIFS share is a named access point in a volume. Before users and applications can access data on the CIFS server over SMB,
a CIFS share must be created with sufficient share permission. CIFS shares are tied to the CIFS server on the SVM.
When a CIFS share is created, ONTAP creates a default ACL for the share with Full Control permissions for Everyone.

Name	Type	Description
access_based_enumeration	boolean	If enabled, all folders inside this share are visible to a user based on that individual user access right; prevents the display of folders or other shared resources that the user does not have access to.
allow_unencrypted_access	boolean	Specifies whether or not the SMB2 clients are allowed to access the encrypted share.
attribute_cache	boolean	Specifies that connections through this share cache attributes for a short time to improve performance.
browsable	boolean	Specifies whether or not the Windows clients can browse the share.

Name	Type	Description
change_notify	boolean	Specifies whether CIFS clients can request for change notifications for directories on this share.
comment	string	Specify the CIFS share descriptions.
continuously_available	boolean	Specifies whether or not the clients connecting to this share can open files in a persistent manner. Files opened in this way are protected from disruptive events, such as, failover and giveback. If the Vscan ONTAP feature is used, it is not supported in continuous availability (CA) shares. • Default value: 1 • Introduced in: 9.10 • x-nullable: true
dir_umask	string	Directory Mode Creation Mask to be viewed as an octal number.
encryption	boolean	Specifies that SMB encryption must be used when accessing this share. Clients that do not support encryption are not able to access this share.
file_umask	string	File Mode Creation Mask to be viewed as an octal number.
force_group_for_create	string	Specifies that all files that CIFS users create in a specific share belong to the same group (also called the "force-group"). The "force-group" must be a predefined group in the UNIX group database. This setting has no effect unless the security style of the volume is UNIX or mixed security style.

Name	Type	Description
max_connections_per_share	integer	Maximum number of tree connections on share.
namespace_caching	boolean	Specifies whether or not the SMB clients connecting to this share can cache the directory enumeration results returned by the CIFS servers.
no_strict_security	boolean	Specifies whether or not CIFS clients can follow a unix symlinks outside the share boundaries.
offline_files	string	Offline Files The supported values are: • none - Clients are not permitted to cache files for offline access. • manual - Clients may cache files that are explicitly selected by the user for offline access. • documents - Clients may automatically cache files that are used by the user for offline access. • programs - Clients may automatically cache files that are used by the user for offline access and may use those files in an offline mode even if the share is available.
oplocks	boolean	Specify whether opportunistic locks are enabled on this share. "Oplocks" allow clients to lock files and cache content locally, which can increase performance for file operations.

Name	Type	Description
path	string	The fully-qualified pathname in the owning SVM namespace that is shared through this share. If this is a home directory share then the path should be dynamic by specifying the pattern %w (Windows user name), %u (UNIX user name), or %d (domain name) variables in any combination. ONTAP generates the path dynamically for the connected user and this path is appended to each search path to find the full Home Directory path. • example: /volume_1/eng_vol/ • maxLength: 256 • minLength: 1 • Introduced in: 9.6 • x-nullable: true
show_previous_versions	boolean	Specifies that the previous version can be viewed and restored from the client.
show_snapshot	boolean	Specifies whether or not the snapshots can be viewed and traversed by clients.
unix_symlink	string	Controls the access of UNIX symbolic links to CIFS clients. The supported values are: • local - Enables only local symbolic links which is within the same CIFS share. • widelink - Enables both local symlinks and widelinks. • disable - Disables local symlinks and widelinks.
volume	volume	

Name	Type	Description
vscan_profile	string	Vscan File-Operations Profile The supported values are: • no_scan - Virus scans are never triggered for accesses to this share. • standard - Virus scans can be triggered by open, close, and rename operations. • strict - Virus scans can be triggered by open, read, close, and rename operations. • writes_only - Virus scans can be triggered only when a file that has been modified is closed.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage share-level ACL

Protocols CIFS shares svm.uuid share acls endpoint overview

Overview

Access to files and folders can be secured over a network by configuring share access control lists (ACLs) on CIFS shares. Share-level ACLs can be configured by using either Windows users and groups or UNIX users and groups. A share-level ACL consists of a list of access control entries (ACEs). Each ACE contains a user or group name and a set of permissions that determines user or group access to the share, regardless of the security style of the volume or qtree containing the share.

When an SMB user tries to access a share, ONTAP checks the share-level ACL to determine whether access should be granted. A share-level ACL only restricts access to files in the share; it never grants more access than the file level ACLs.

Examples

Creating a CIFS share ACL

To create a share ACL for a CIFS share, use the following API. Note the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/cifs/shares{svm.uuid}/{share}/acls

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/shares/000c5cd2-ebdf-
11e8-a96e-0050568ea3cb/sh1/acls?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"permission\": \"no_access\", \"type\": \"windows\", \"user_or_group\":
\"root\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "user_or_group": "root",
    "type": "windows",
    "permission": "no_access",
    "sid": "S-1-1-0"
  }
]
}
```

Retrieving all CIFS shares ACLs for a specific CIFS share for a specific SVM in the cluster

```
# The API:
GET /api/protocols/cifs/shares/{svm.uuid}/{share}/acls

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shares/000c5cd2-ebdf-
11e8-a96e-
0050568ea3cb/sh1/acls?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
      "name": "vs1"
    },
    "share": "sh1",
    "user_or_group": "Everyone",
    "type": "windows",
    "permission": "full_control",
    "sid": "S-1-1-0"
  },
  {
    "svm": {
      "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
      "name": "vs1"
    },
    "share": "sh1",
    "user_or_group": "root",
    "type": "windows",
    "permission": "no_access",
    "sid": "S-1-1-0"
  }
],
"num_records": 2
}
```

Retrieving a CIFS share ACLs for a user or a group of type Windows or type UNIX on a CIFS share for a specific SVM

```
# The API:
GET
/api/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/shares/000c5cd2-ebdf-
11e8-a96e-0050568ea3cb/sh1/acls/everyone/windows" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
  "name": "vs1"
},
"share": "sh1",
"user_or_group": "everyone",
"type": "windows",
"permission": "full_control",
"sid": "S-1-1-0"
}
```

Updating a CIFS share ACLs of a user or group on a CIFS share for a specific SVM

The CIFS share ACL being modified is identified by the UUID of its SVM, the CIFS share name, user or group name and the type of the user or group.

```
# The API:
PATCH
/api/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/shares/000c5cd2-ebdf-
11e8-a96e-0050568ea3cb/sh1/acls/everyone/windows" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"permission\": \"no_access\"}"
```

Removing a CIFS share ACLs of a user or group on a CIFS Share for a specific SVM

The CIFS share ACL being removed is identified by the UUID of its SVM, the CIFS share name, user or group name and the type of the user or group.

```
# The API:
DELETE
/api/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/shares/000c5cd2-ebdf-
11e8-a96e-0050568ea3cb/sh1/acls/everyone/windows" -H "accept:
application/json"
```

Retrieve a share-level ACL on a CIFS share

GET `/protocols/cifs/shares/{svm.uuid}/{share}/acls`

Introduced In: 9.6

Retrieves the share-level ACL on a CIFS share.

Related ONTAP commands

- `vserver cifs share access-control show`

Learn more

- DOC /protocols/cifs/shares/{svm.uuid}/{share}/acls

Parameters

Name	Type	In	Required	Description
share	string	path	True	CIFS Share Name
unix_id	integer	query	False	Filter by unix_id • Introduced in: 9.16
permission	string	query	False	Filter by permission
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.9

Name	Type	In	Required	Description
sid	string	query	False	Filter by sid • Introduced in: 9.13
user_or_group	string	query	False	Filter by user_or_group
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_share_acl]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "permission": "string",
      "share": "string",
      "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "unix_id": 100,
      "user_or_group": "ENGDOMAIN\\ad_user"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_share_acl

The permissions that users and groups have on a CIFS share.

Name	Type	Description
_links	_links	

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name
sid	string	Specifies the user or group secure identifier (SID).
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a share-level ACL on a CIFS share

POST `/protocols/cifs/shares/{svm.uuid}/{share}/acls`

Introduced In: 9.6

Creates a share-level ACL on a CIFS share.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the share acl.
- `share` - Existing CIFS share in which to create the share acl.
- `user_or_group` - Existing user or group name for which the acl is added on the CIFS share.
- `permission` - Access rights that a user or group has on the defined CIFS share.

Default property values

- `type` - *windows*

Related ONTAP commands

- `vserver cifs share access-control create`

Learn more

- DOC /protocols/cifs/shares/{svm.uuid}/{share}/acls

Parameters

Name	Type	In	Required	Description
share	string	path	True	CIFS Share Name
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name
sid	string	Specifies the user or group secure identifier (SID).
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

Example request

```
{
  "permission": "string",
  "share": "string",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "unix_id": 100,
  "user_or_group": "ENGDOMAIN\\ad_user"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655446	Failed to resolve the security identifier (SID) for the account named {user_or_group}. Reason: {Reason}.
4849678	Failed to resolve {user_or_group} name to a UNIX ID. Reason: {Reason}.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_share_acl

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name
sid	string	Specifies the user or group secure identifier (SID).

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a share-level ACL on a CIFS share

DELETE `/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}`

Introduced In: 9.6

Deletes a share-level ACL on a CIFS share.

Related ONTAP commands

- `vserver cifs share access-control delete`

Learn more

- DOC /protocols/cifs/shares/{svm.uuid}/{share}/acls

Parameters

Name	Type	In	Required	Description
share	string	path	True	Share name
user_or_group	string	path	True	User or group name
type	string	path	True	User or group type
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a share-level ACL on a CIFS share for a user or group

GET `/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}`

Introduced In: 9.6

Retrieves the share-level ACL on CIFS share for a specified user or group.

Related ONTAP commands

- `vserver cifs share access-control show`

Learn more

- DOC /protocols/cifs/shares/{svm.uuid}/{share}/acls

Parameters

Name	Type	In	Required	Description
share	string	path	True	Share name
user_or_group	string	path	True	User or group name
type	string	path	True	User or group type
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name
sid	string	Specifies the user or group secure identifier (SID).
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the type of the user or group to add to the access control list of a CIFS share. The following values are allowed: • windows - Windows user or group • unix_user - UNIX user • unix_group - UNIX group
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).
user_or_group	string	Specifies the user or group name to add to the access control list of a CIFS share.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "permission": "string",
  "share": "string",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "unix_id": 100,
  "user_or_group": "ENGDOMAIN\\ad_user"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a share-level ACL on a CIFS share

PATCH `/protocols/cifs/shares/{svm.uuid}/{share}/acls/{user_or_group}/{type}`

Introduced In: 9.6

Updates a share-level ACL on a CIFS share.

Related ONTAP commands

- `vserver cifs share access-control modify`

Learn more

- DOC /protocols/cifs/shares/{svm.uuid}/{share}/acls

Parameters

Name	Type	In	Required	Description
share	string	path	True	Share name
user_or_group	string	path	True	User or group name
type	string	path	True	User or group type
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name

Name	Type	Description
sid	string	Specifies the user or group secure identifier (SID).
svm	svm	SVM, applies only to SVM-scoped objects.
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).

Example request

```
{
  "permission": "string",
  "share": "string",
  "sid": "S-1-5-21-256008430-3394229847-3930036330-1001",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_id": 100
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655516	The share ACL does not exist for given user and share

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_share_acl

The permissions that users and groups have on a CIFS share.

Name	Type	Description
permission	string	Specifies the access rights that a user or group has on the defined CIFS Share. The following values are allowed: • no_access - User does not have CIFS share access • read - User has only read access • change - User has change access • full_control - User has full_control access
share	string	CIFS share name
sid	string	Specifies the user or group secure identifier (SID).

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
unix_id	integer	Specifies the UNIX user or group identifier (UID/GID).

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage CIFS UNIX symlink mapping

Protocols CIFS unix-symlink-mapping endpoint overview

Overview

ONTAP allows both CIFS and NFS to access the same datastore. This datastore can contain symbolic links which are files, created by UNIX clients. It contains a reference to another file or directory. If an SMB client accesses a symbolic link, it is redirected to the target file or directory that the symbolic link refers to. The symbolic links can point to files within the volume that contain the share, or to files that are contained in other volumes on the Storage Virtual Machine (SVM), or even to volumes contained on other SVMs.

There are two types of symbolic links:

Relative A relative symbolic link contains a reference to the file or directory relative to its parent directory. Therefore, the path of the file it is referring to should not begin with a backslash (/). If you enable symbolic links on a share, relative symbolic links work without UNIX symlink mapping.

Absolute An absolute symbolic link contains a reference to a file or directory in the form of an absolute path. Therefore, the path of the file it is referring to should begin with a backslash (/). An absolute symbolic link can refer to a file or directory within or outside of the file system of the symbolic link. If the target is not in the same local file system, the symbolic link is called a "widelink". If the symbolic link is enabled on a share and absolute symbolic links do not work right away, the mapping between the UNIX path of the symbolic link to the destination CIFS path must be created. When creating absolute symbolic link mappings, locality could be either "local" or "widelink" and it must be specified. If UNIX symlink mapping is created for a file or directory which is outside of the local share but the locality is set to "local", ONTAP does not allow access to the target.

A UNIX symbolic link support could be added to SMB shares by specifying the *unix_symlink* property during the creation of SMB shares or at any time by modifying the existing SMB *unix_symlink* property. UNIX symbolic link support is enabled by default.

Examples

Creating a UNIX symlink mapping for CIFS shares

To create UNIX symlink mappings for SMB shares, use the following API. Note the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /api/protocols/cifs/unix-symlink-mapping

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/unix-symlink-
mapping?return_records=true" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"svm\": { \"name\": \"vs1\", \"uuid\":
\"000c5cd2-ebdf-11e8-a96e-0050568ea3cb\" }, \"target\": {
\"home_directory\": false, \"locality\": \"local\", \"path\":
\"/dir1/dir2/\", \"server\": \"cifs123\", \"share\": \"sh1\" },
\"unix_path\": \"/mnt/eng_volume/\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
      "name": "vs1"
    },
    "unix_path": "/mnt/eng_volume/",
    "target": {
      "share": "sh1",
      "path": "/dir1/dir2/",
      "server": "cifs123",
      "locality": "local",
      "home_directory": false
    }
  }
]
}
```

Retrieving UNIX symlink mappings for all SVMs in the cluster

```
# The API:
GET /api/protocols/cifs/unix-symlink-mapping

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/unix-symlink-
mapping?fields=*&return_records=true&return_timeout=15" -H "accept:
application/hal+json"
```

```
# The response:
{
"records": [
  {
    "svm": {
      "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/000c5cd2-ebdf-11e8-a96e-0050568ea3cb"
        }
      }
    },
    "unix_path": "/mnt/eng_volume/",
    "target": {
      "share": "sh1",
      "path": "/dir1/dir2/",
      "server": "CIFS123",
      "locality": "local",
      "home_directory": false
    },
    "_links": {
      "self": {
        "href": "/api/protocols/cifs/unix-symlink-mapping/000c5cd2-ebdf-
11e8-a96e-0050568ea3cb/%2Fmnt%2Feng_volume%2F"
      }
    }
  },
  {
    "svm": {
      "uuid": "1d30d1b1-ebdf-11e8-a96e-0050568ea3cb",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/1d30d1b1-ebdf-11e8-a96e-0050568ea3cb"
        }
      }
    },
    "unix_path": "/mnt/eng_volume/",
    "target": {
      "share": "ENG_SHARE",
      "path": "/dir1/dir2/",
      "server": "ENGCIFS",
      "locality": "widelink",
      "home_directory": false
    },
```

```
    "_links": {
      "self": {
        "href": "/api/protocols/cifs/unix-symlink-mapping/1d30d1b1-ebdf-
11e8-a96e-0050568ea3cb/%2Fmnt%2Feng_volume%2F"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/cifs/unix-symlink-
mapping?fields=*&return_records=true&return_timeout=15"
  }
}
}
```

Retrieving a specific UNIX symlink mapping for an SVM

The mapping being returned is identified by the UUID of its SVM and the unix-path.

```
# The API:
GET /api/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/unix-symlink-
mapping/000c5cd2-ebdf-11e8-a96e-0050568ea3cb/%2Fmnt%2Feng_volume%2F" -H
"accept: application/json"

# The response:
{
"svm": {
  "uuid": "000c5cd2-ebdf-11e8-a96e-0050568ea3cb",
 "name": "vs1"
},
"unix_path": "/mnt/eng_volume/",
"target": {
  "share": "sh1",
  "path": "/dir1/dir2/",
  "server": "CIFS123",
  "locality": "local",
  "home_directory": false
}
}
```

Updating a specific UNIX symlink mapping for an SVM

The mapping being modified is identified by the UUID of its SVM and the unix-path.

```
# The API:
PATCH /api/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/unix-symlink-
mapping/000c5cd2-ebdf-11e8-a96e-0050568ea3cb/%2Fmnt%2Feng_volume%2F" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"target\": { \"home_directory\": true, \"locality\": \"widelink\",
\"path\": \"/new_path/\", \"server\": \"HR_SERVER\", \"share\": \"sh2\"
}}"
```

Removing a specific UNIX symlink mapping for an SVM

The mapping being removed is identified by the UUID of its SVM and the unix-path.

```
# The API:
DELETE /api/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/cifs/unix-symlink-
mapping/000c5cd2-ebdf-11e8-a96e-0050568ea3cb/%2Fmnt%2Feng_volume%2F" -H
"accept: application/json"
```

Retrieve UNIX symbolic link mappings for CIFS clients

GET `/protocols/cifs/unix-symlink-mapping`

Introduced In: 9.6

Retrieves UNIX symbolic link mappings for CIFS clients.

Related ONTAP commands

- `vserver cifs symlink show`

Learn more

- DOC /protocols/cifs/unix-symlink-mapping

Parameters

Name	Type	In	Required	Description
target.home_directory	boolean	query	False	Filter by target.home_directory
target.share	string	query	False	Filter by target.share • maxLength: 80
target.locality	string	query	False	Filter by target.locality
target.path	string	query	False	Filter by target.path • maxLength: 256
target.server	string	query	False	Filter by target.server • maxLength: 45
unix_path	string	query	False	Filter by unix_path • maxLength: 256
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cifs_symlink_mapping]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "locality": "string",
        "path": "/dir1/dir2/",
        "server": "ENGCIFS",
        "share": "ENG_SHARE"
      },
      "unix_path": "/mnt/eng_volume/"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_target

Name	Type	Description
home_directory	boolean	Specify if the destination share is a home directory.

Name	Type	Description
locality	string	Specifies whether the CIFS symbolic link is a local link or wide link. The following values are supported: • local - Local symbolic link maps only to the same CIFS share. • widelink - Wide symbolic link maps to any CIFS share on the network.
path	string	Specifies the CIFS path on the destination to which the symbolic link maps. The final path is generated by concatenating the CIFS server name, the share name, the cifs-path and the remaining path in the symbolic link left after the prefix match. This value is specified by using a UNIX-style path name. The trailing forward slash is required for the full path name to be properly interpreted.
server	string	Specifies the destination CIFS server where the UNIX symbolic link is pointing. This field is mandatory if the locality of the symbolic link is 'widelink'. You can specify the value in any of the following formats: • DNS name of the CIFS server. • IP address of the CIFS server. • NetBIOS name of the CIFS server.
share	string	Specifies the CIFS share name on the destination CIFS server to which the UNIX symbolic link is pointing.

cifs_symlink_mapping

ONTAP allows for both CIFS and NFS access to the same datastore. This datastore can contain symbolic links created by UNIX clients which can point anywhere from the perspective of the UNIX client. To Access such UNIX symlink from CIFS share, we need to create a CIFS symbolic link path mapping from a UNIX symlink and target it as a CIFS path.

Name	Type	Description
_links	_links	
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	
unix_path	string	Specifies the UNIX path prefix to be matched for the mapping.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a UNIX symbolic link mapping for a CIFS client

POST `/protocols/cifs/unix-symlink-mapping`

Introduced In: 9.6

Creates a UNIX symbolic link mapping for a CIFS client.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the CIFS unix-symlink-mapping.

- `unix_path` - UNIX path to which the CIFS symlink mapping to be created.
- `target.share` - CIFS share name on the destination CIFS server to which the UNIX symbolic link is pointing.
- `target.path` - CIFS path on the destination to which the symbolic link maps.

Default property values

- `target.server` - *Local_NetBIOS_Server_Name*
- `locality` - *local*
- `home_directory` - *false*

Related ONTAP commands

- `vserver cifs symlink create`

Learn more

- DOC /protocols/cifs/unix-symlink-mapping

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	
unix_path	string	Specifies the UNIX path prefix to be matched for the mapping.

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "locality": "string",
    "path": "/dir1/dir2/",
    "server": "ENGCIFS",
    "share": "ENG_SHARE"
  },
  "unix_path": "/mnt/eng_volume/"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[cifs_symlink_mapping]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "locality": "string",
        "path": "/dir1/dir2/",
        "server": "ENGCIFS",
        "share": "ENG_SHARE"
      },
      "unix_path": "/mnt/eng_volume/"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655654	Must specify the target CIFS share while creating path mapping entries with localities "local" or "widelink"
655572	The target path contains illegal characters or is too long
655574	The target server contains illegal characters or is too long
655436	If the locality is "local", the target server must be blank or must match the CIFS NetBIOS name for given SVM

Error Code	Description
655439	The Specified target server is local CIFS server for given SVM but the locality is specified as "widelink"
655546	Failed to create symlink mapping because administrative share cannot be used as target share
655437	Failed to create the symlink mapping with locality "local" because the target share does not exist for the specified SVM
655429	UNIX path must begin and end with a "/"
655430	Target path must begin and end with a "/"
655399	Failed to get the CIFS server for specified SVM
656481	Failed to create the widelink because the target share does not exist for the specified SVM

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_target

Name	Type	Description
home_directory	boolean	Specify if the destination share is a home directory.
locality	string	Specifies whether the CIFS symbolic link is a local link or wide link. The following values are supported: • local - Local symbolic link maps only to the same CIFS share. • widelink - Wide symbolic link maps to any CIFS share on the network.

Name	Type	Description
path	string	Specifies the CIFS path on the destination to which the symbolic link maps. The final path is generated by concatenating the CIFS server name, the share name, the cifs-path and the remaining path in the symbolic link left after the prefix match. This value is specified by using a UNIX-style path name. The trailing forward slash is required for the full path name to be properly interpreted.
server	string	Specifies the destination CIFS server where the UNIX symbolic link is pointing. This field is mandatory if the locality of the symbolic link is 'widelink'. You can specify the value in any of the following formats: • DNS name of the CIFS server. • IP address of the CIFS server. • NetBIOS name of the CIFS server.
share	string	Specifies the CIFS share name on the destination CIFS server to which the UNIX symbolic link is pointing.

cifs_symlink_mapping

ONTAP allows for both CIFS and NFS access to the same datastore. This datastore can contain symbolic links created by UNIX clients which can point anywhere from the perspective of the UNIX client. To Access such UNIX symlink from CIFS share, we need to create a CIFS symbolic link path mapping from a UNIX symlink and target it as a CIFS path.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	

Name	Type	Description
unix_path	string	Specifies the UNIX path prefix to be matched for the mapping.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a UNIX symbolic link mapping for CIFS clients

DELETE `/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}`

Introduced In: 9.6

Deletes the UNIX symbolic link mapping for CIFS clients.

Related ONTAP commands

- `vserver cifs symlink delete`

Learn more

- DOC /protocols/cifs/unix-symlink-mapping

Parameters

Name	Type	In	Required	Description
unix_path	string	path	True	UNIX symbolic link path

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a UNIX symbolic link mapping for CIFS clients

GET `/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}`

Introduced In: 9.6

Retrieves a UNIX symbolic link mapping for CIFS clients.

Related ONTAP commands

- `vserver cifs symlink show`

Learn more

- DOC /protocols/cifs/unix-symlink-mapping

Parameters

Name	Type	In	Required	Description
unix_path	string	path	True	UNIX symbolic link path
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	
unix_path	string	Specifies the UNIX path prefix to be matched for the mapping.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "locality": "string",
    "path": "/dir1/dir2/",
    "server": "ENGCIFS",
    "share": "ENG_SHARE"
  },
  "unix_path": "/mnt/eng_volume/"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_target

Name	Type	Description
home_directory	boolean	Specify if the destination share is a home directory.
locality	string	Specifies whether the CIFS symbolic link is a local link or wide link. The following values are supported: • local - Local symbolic link maps only to the same CIFS share. • widelink - Wide symbolic link maps to any CIFS share on the network.

Name	Type	Description
path	string	Specifies the CIFS path on the destination to which the symbolic link maps. The final path is generated by concatenating the CIFS server name, the share name, the cifs-path and the remaining path in the symbolic link left after the prefix match. This value is specified by using a UNIX-style path name. The trailing forward slash is required for the full path name to be properly interpreted.
server	string	Specifies the destination CIFS server where the UNIX symbolic link is pointing. This field is mandatory if the locality of the symbolic link is 'widelink'. You can specify the value in any of the following formats: • DNS name of the CIFS server. • IP address of the CIFS server. • NetBIOS name of the CIFS server.
share	string	Specifies the CIFS share name on the destination CIFS server to which the UNIX symbolic link is pointing.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a UNIX symbolic link mapping for CIFS clients

PATCH `/protocols/cifs/unix-symlink-mapping/{svm.uuid}/{unix_path}`

Introduced In: 9.6

Updates the UNIX symbolic link mapping for CIFS clients.

Related ONTAP commands

- `vserver cifs symlink modify`

Learn more

- DOC /protocols/cifs/unix-symlink-mapping

Parameters

Name	Type	In	Required	Description
unix_path	string	path	True	UNIX symbolic link path
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "locality": "string",
    "path": "/dir1/dir2/",
    "server": "ENGCIFS",
    "share": "ENG_SHARE"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655437	Failed to modify the symlink mapping with locality "local" because the target share does not exist for the specified SVM
655573	Failed to modify the symlink mapping to target path because it contains illegal characters or is too long
655575	Failed to modify the symlink mapping to target server because it contains illegal characters or is too long
655547	Failed to modify symlink mapping because administrative share cannot be used as target share
656481	Failed to modify the widelink because the target share does not exist for the specified SVM

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cifs_target

Name	Type	Description
home_directory	boolean	Specify if the destination share is a home directory.
locality	string	Specifies whether the CIFS symbolic link is a local link or wide link. The following values are supported: • local - Local symbolic link maps only to the same CIFS share. • widelink - Wide symbolic link maps to any CIFS share on the network.

Name	Type	Description
path	string	Specifies the CIFS path on the destination to which the symbolic link maps. The final path is generated by concatenating the CIFS server name, the share name, the cifs-path and the remaining path in the symbolic link left after the prefix match. This value is specified by using a UNIX-style path name. The trailing forward slash is required for the full path name to be properly interpreted.
server	string	Specifies the destination CIFS server where the UNIX symbolic link is pointing. This field is mandatory if the locality of the symbolic link is 'widelink'. You can specify the value in any of the following formats: • DNS name of the CIFS server. • IP address of the CIFS server. • NetBIOS name of the CIFS server.
share	string	Specifies the CIFS share name on the destination CIFS server to which the UNIX symbolic link is pointing.

cifs_symlink_mapping

ONTAP allows for both CIFS and NFS access to the same datastore. This datastore can contain symbolic links created by UNIX clients which can point anywhere from the perspective of the UNIX client. To Access such UNIX symlink from CIFS share, we need to create a CIFS symbolic link path mapping from a UNIX symlink and target it as a CIFS path.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target	cifs_target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Perform bulk import for CIFS user groups

Protocols CIFS users-and-groups bulk-import svm.uuid endpoint overview

Overview

Bulk import of the CIFS local users, groups and group membership information can be done from the specified Uniform Resource Identifier (URI). This replaces the existing contents of the CIFS local users, groups and group memberships. This API is used to bulk import from the specified URI, get the status of the last import and to upload the import status to the specified URI.

Retrieving import status of the last bulk import

The bulk-import GET endpoint retrieves the status of the last bulk-import operation of the specified SVM.

Examples

Retrieving the status of a successful bulk import

```
# The API:
/api/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/users-and-groups/bulk-
import/6de1d39d-1473-11ec-b0cf-0050568e4acc" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "6de1d39d-1473-11ec-b0cf-0050568e4acc",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/6de1d39d-1473-11ec-b0cf-0050568e4acc"
    }
  }
},
"import_uri": {
  "path": "http://<import_uri>/file.7z"
},
"state": "success",
"detailed_status": {
  "message": "Operation completed successfully.",
  "code": "0"
},
"elements_ignored": 0,
"elements_imported": 2,
"_links": {
  "self": {
    "href": "/api/protocols/cifs/users-and-groups/import/6de1d39d-1473-
11ec-b0cf-0050568e4acc"
  }
}
}
```

Retrieving the status of a bulk import that failed

```
# The API:
/api/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/users-and-groups/bulk-
import/6de1d39d-1473-11ec-b0cf-0050568e4acc" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "6de1d39d-1473-11ec-b0cf-0050568e4acc",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/6de1d39d-1473-11ec-b0cf-0050568e4acc"
    }
  }
},
"import_uri": {
  "path": "http://<import_uri>/file.7z"
},
"state": "success",
"detailed_status": {
  "message": "Failed parsing line 1 of the input file. Check syntax and
contents.",
  "code": "655698"
},
"elements_ignored": 0,
"elements_imported": 0,
"_links": {
  "self": {
    "href": "/api/protocols/cifs/users-and-groups/import/6de1d39d-1473-
11ec-b0cf-0050568e4acc"
  }
}
}
```

Retrieving bulk import information for CIFS local users, groups, and group memberships

```
# The API:
/api/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/users-and-groups/bulk-
import/6de1d39d-1473-11ec-b0cf-0050568e4acc" -H "accept: application/json"
-d
'{"import_uri.username":"user1","import_uri.password":"aaaa","decryption_p
assword":"cccc","import_uri.path":"http://example.com/file1.7z"}'

# The response:
{
"job": {
  "uuid": "e8293262-1af0-11ec-8243-0050568e4acc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e8293262-1af0-11ec-8243-0050568e4acc"
    }
  }
}
}
```

Retrieving status upload information of the last import operation for the specified URI

```
# The API:
/api/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/users-and-groups/bulk-
import/6de1d39d-1473-11ec-b0cf-0050568e4acc" -H "accept: application/json"
-d
'{"status_uri.username":"user1","status_uri.password":"aaaa","status_uri.p
ath":"http://example.com/fileupload.7z"}'

# The response:
{
"job": {
  "uuid": "e8293262-1af0-11ec-8243-0050568e4acd",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e8293262-1af0-11ec-8243-0050568e4acd"
    }
  }
}
}
```

Retrieve import operation status for CIFS local users, groups, and group memberships

GET `/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}`

Introduced In: 9.11

Retrieves information about the import operation status of the CIFS local users, groups, and group memberships.

Related ONTAP commands

- `vserver cifs users-and-groups import get-status`

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
detailed_status	detailed_status	
elements_ignored	integer	Number of elements ignored.
elements_imported	integer	Number of elements successfully imported.
import_uri	import_uri	
state	string	Operation status.
status_uri	status_uri	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "detailed_status": {
    "code": "6684732",
    "message": "string"
  },
  "elements_ignored": 0,
  "elements_imported": 0,
  "import_uri": {
    "path": "http://web.sample.com/web1/file1.7z"
  },
  "state": "string",
  "status_uri": {
    "path": "http://web.sample.com/web1/file1.7z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

detailed_status

Name	Type	Description
code	string	Code corresponding to the import status failure.
message	string	Detailed description of the import status.

import_uri

Name	Type	Description
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.

status_uri

Name	Type	Description
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Upload the bulk-import status of an SVM to a URI

PATCH `/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}`

Introduced In: 9.11

Upload the status of the bulk-import of the specified SVM to the specified URI.

Important notes

- Only the status of the last bulk-import will be uploaded and not the status of the previous bulk-imports.

Required properties

- status_uri.path - URI to which the status needs to be uploaded.

Optional properties

- status_uri.username - Username of the specified URI.
- status_uri.password - Password of the specified URI.

Related ONTAP commands

- `vserver cifs users-and-groups import get-status`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
elements_ignored	integer	Number of elements ignored.
elements_imported	integer	Number of elements successfully imported.
state	string	Operation status.
status_uri	status_uri	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "elements_ignored": 0,
  "elements_imported": 0,
  "state": "string",
  "status_uri": {
    "password": "string",
    "path": "http://web.sample.com/web1/file1.7z",
    "username": "user1"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

detailed_status

Name	Type	Description
code	string	Code corresponding to the import status failure.
message	string	Detailed description of the import status.

import_uri

Name	Type	Description
password	string	Password of the specified URI.
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.
username	string	Username of the specified URI.

status_uri

Name	Type	Description
password	string	Password of the specified URI.
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.
username	string	Username of the specified URI.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_users_and_groups_import

Name	Type	Description
elements_ignored	integer	Number of elements ignored.
elements_imported	integer	Number of elements successfully imported.
state	string	Operation status.
status_uri	status_uri	
svm	svm	SVM, applies only to SVM-scoped objects.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Load CIFS local users, groups and group membership files from a URL

POST `/protocols/cifs/users-and-groups/bulk-import/{svm.uuid}`

Introduced In: 9.11

Loads CIFS local users,groups and group memberships file from the specified URL.

Important notes

Existing CIFS local users, groups, and group memberships will be replaced with the contents of the file.

Required properties

- import_uri.path
- decryption_password

Optional properties

- import_uri.username
- import_uri.password

Related ONTAP commands

- `vserver cifs users-and-groups import load-from-uri`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
decryption_password	string	Password to decrypt the compressed file.
elements_ignored	integer	Number of elements ignored.
elements_imported	integer	Number of elements successfully imported.

Name	Type	Description
import_uri	import_uri	
state	string	Operation status.
status_uri	status_uri	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "decryption_password": "string",
  "elements_ignored": 0,
  "elements_imported": 0,
  "import_uri": {
    "password": "string",
    "path": "http://web.sample.com/web1/file1.7z",
    "username": "user1"
  },
  "state": "string",
  "status_uri": {
    "password": "string",
    "path": "http://web.sample.com/web1/file1.7z",
    "username": "user1"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655688	Invalid file decryption password. Valid password characters are: a-z, A-Z, and 0-9.
655660	This operation is only permitted on data SVMs.
655661	URI username, URI password and the file decryption password cannot exceed 128 characters.
655689	File decryption password cannot be empty.
655399	CIFS server does not exist.
655683	Domain Security Identifier is already present in Active Directory.
655685	Cluster is busy processing a local users and groups transition task.
655687	Unknown file schema version.
655690	Processing the import file failed. Check the file decryption password, compression format and content.

Error Code	Description
655691	Error occurred before processing the file. Verify the input parameters.
655692	Domain name that qualifies the local users and groups must match the CIFS server name.
655693	All local users and local groups must be prefixed with the NetBIOS domain name.
655693	Well-known user of group will not be present in this SVM.
655695	Group membership of the specified user will not be created.
655697	Failed processing a line of the bulk import file.
655698	Failed to parse a line of the bulk import file. Check the syntax and contents.
655699	Invalid number of elements in a line of the bulk import file.
655700	Failed processing a field index of a line in the input bulk import file.
655701	Unknown element type.
655702	Invalid URI.
655703	Failed to download the import file. Network error occurred.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

detailed_status

Name	Type	Description
code	string	Code corresponding to the import status failure.
message	string	Detailed description of the import status.

import_uri

Name	Type	Description
password	string	Password of the specified URI.
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.
username	string	Username of the specified URI.

status_uri

Name	Type	Description
password	string	Password of the specified URI.
path	string	URI from which to load the input file containing the CIFS local users and groups. The file must be encrypted using the 7zip utility. URI can be FTP or HTTP.
username	string	Username of the specified URI.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_cifs_users_and_groups_import

Name	Type	Description
decryption_password	string	Password to decrypt the compressed file.
elements_ignored	integer	Number of elements ignored.
elements_imported	integer	Number of elements successfully imported.
import_uri	import_uri	
state	string	Operation status.
status_uri	status_uri	
svm	svm	SVM, applies only to SVM-scoped objects.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage CIFS user group privileges

Protocols CIFS users-and-groups privileges endpoint overview

Overview

Privileges associated with local or Active Directory users or groups defines the permissions for the specified user or group. You can use this API to display and/or control privileges of local or Active Directory users or groups.

Retrieving the privileges of a specific local or Active Directory user or group and an SVM

The users and groups privileges GET endpoint retrieves privileges of the specified local or Active Directory user or group and the SVM.

Examples

Retrieving the privileges of all of the users or groups of data SVMs.

```
# The API:
/api/protocols/cifs/users-and-groups/privileges

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/users-and-
groups/privileges?fields=*" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "name": "VS1.CIFS\\user1",
```

```
    "privileges": [
      "sechangenotifyprivilege",
      "setakeownershipprivilege"
    ]
  },
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "name": "ACTIVE_DIRECTORY\\user",
    "privileges": [
      "sebackupprivilege",
      "setakeownershipprivilege"
    ]
  },
  {
    "svm": {
      "uuid": "0ac79c37-3867-11eb-bece-0050568ed0a2",
      "name": "vs2"
    },
    "name": "VS2.CIFS\\group1",
    "privileges": [
      "sesecurityprivilege",
      "sebackupprivilege",
      "serestoreprivilege"
    ]
  }
]
}
```


Retrieving the privileges of the specific SVM and user or group

```
# The API:
/api/protocols/cifs/users-and-groups/{svm.uuid}/{name}/privileges

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/cifs/users-and-
groups/privileges/25b363a6-2971-11eb-88e1-0050568eefd4/user1" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
  "name": "vs1"
},
"name": "VS1.CIFS\\user1",
"privileges": [
  "sechangenotifyprivilege",
  "setakeownershipprivilege"
]
}
```

Adding privileges to the local or Active Directory user or group

The users and groups privileges POST endpoint adds privileges to the specified local or Active Directory user or group and the SVM.

Adding the privileges to the local user 'user1'

```
# The API:
/api/protocols/cifs/users-and-groups/privileges/{svm.uuid}/{name}

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/cifs/users-and-
groups/privileges/179d3c85-7053-11e8-b9b8-005056b41bd1/user1" -H "accept:
application/json" -H "Content-Type: application/json" -d '{ "privileges":
[ "SeSecurityPrivilege", "SeBackupPrivilege", "SeRestorePrivilege"] }'
```

Updating the privileges of the local or Active Directory user or group of a specific SVM

Example

Updating the privileges of local user 'user1' in SVM 'vs1' to 'SeRestorePrivilege' and 'SeSecurityPrivilege'

```
# The API:
/api/protocols/cifs/users-and-groups/privileges/{svm.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/users-and-
groups/privileges/179d3c85-7053-11e8-b9b8-005056b41bd1/user1" -H "accept:
application/json" -d '{ "privileges": [ "SeRestorePrivilege",
"SeSecurityPrivilege"] }'
```

Reset all the privileges associated with the local user 'user1' in SVM 'vs1'

```
# The API:
/api/protocols/cifs/users-and-groups/privileges/{svm.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/cifs/users-and-
groups/privileges/179d3c85-7053-11e8-b9b8-005056b41bd1/user1" -H "accept:
application/json" -d '{ "privileges": [ ] }'
```

Retrieve privileges for all local, or Active Directory users or groups and SVMs

GET `/protocols/cifs/users-and-groups/privileges`

Introduced In: 9.10

Retrieves privileges of the specified local or Active Directory user or group and SVM.

Related ONTAP commands

- `vserver cifs users-and-groups privilege show`

Learn more

- DOC /protocols/cifs/users-and-groups/privileges

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
privileges	string	query	False	Filter by privileges
name	string	query	False	Filter by name

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of local or Active Directory user or group records.

Name	Type	Description
records	array[user_group_privileges]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "user1",
      "privileges": [
        "string"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user_group_privileges

Name	Type	Description
_links	_links	
name	string	Local or Active Directory user or group name.

Name	Type	Description
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Add privileges to a local, or Active Directory user or group and SVM

POST `/protocols/cifs/users-and-groups/privileges`

Introduced In: 9.10

Adds privileges to the specified local or Active Directory user or group and SVM.

Important note

- Specified privileges are appended to the existing list of privileges.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM for which privileges are added to user or group.
- `name` - Existing local or Active Directory user or group for which privileges are to be added.
- `privileges` - List of privileges to be added to a user or group.

Related ONTAP commands

- `vserver cifs users-and-groups privilege add-privilege`

Learn more

- DOC /protocols/cifs/users-and-groups/privileges

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
name	string	Local or Active Directory user or group name.
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "name": "user1",
  "privileges": [
    "string"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655660	The operation is allowed only on data SVMs.
655673	Failed to resolve the user or group.
655730	The specified local user to which privileges are to be associated to does not exist.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user_group_privileges

Name	Type	Description
name	string	Local or Active Directory user or group name.

Name	Type	Description
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve privileges for a local, or Active Directory user or group and SVM

GET `/protocols/cifs/users-and-groups/privileges/{svm.uuid}/{name}`

Introduced In: 9.10

Retrieves privileges of the specified local or Active Directory user or group and SVM.

Related ONTAP commands

- `vserver cifs users-and-groups privilege show`

Learn more

- DOC /protocols/cifs/users-and-groups/privileges

Parameters

Name	Type	In	Required	Description
name	string	path	True	Local or Active Directory user or group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
name	string	Local or Active Directory user or group name.

Name	Type	Description
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "user1",
  "privileges": [
    "string"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update privileges for a local, or Active Directory user or group and SVM

PATCH `/protocols/cifs/users-and-groups/privileges/{svm.uuid}/{name}`

Introduced In: 9.10

Updates privileges of the specified local or Active Directory user or group and SVM.

Important note

- Specified privileges will replace all the existing privileges associated with the user or group.
- To reset privileges associated with the user or group, specify the privileges list as empty.

Related ONTAP commands

- `vserver cifs users-and-groups privilege reset-privilege`

Learn more

- DOC /protocols/cifs/users-and-groups/privileges

Parameters

Name	Type	In	Required	Description
name	string	path	True	Local or Active Directory user or group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking

Example request

```
{
  "privileges": [
    "string"
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	Field 'svm.name' is not supported in the body of PATCH request.
262203	Field 'svm.uuid' is not supported in the body of PATCH request.
655673	Failed to resolve the user or group.
655730	The specified local user to which privileges are to be associated to does not exist.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user_group_privileges

Name	Type	Description
privileges	array[string]	An array of privileges associated with the local or Active Directory user or group. The available values are: • SeTcbPrivilege - Allows user to act as part of the operating system • SeBackupPrivilege - Allows user to back up files and directories, overriding any ACLs • SeRestorePrivilege - Allows user to restore files and directories, overriding any ACLs • SeTakeOwnershipPrivilege - Allows user to take ownership of files or other objects • SeSecurityPrivilege - Allows user to manage auditing and viewing/dumping/clearing the security log • SeChangeNotifyPrivilege - Allows user to bypass traverse checking

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

View file security permissions

Protocols file-security effective-permissions svm.uuid path endpoint overview

Overview

This API displays the effective permission granted to a Windows or UNIX user on the specified file or folder path. A path within the FlexCache volume is not supported.

Examples

Retrieving the effective permission for the specified Windows user on the specified path of an SVM.

```
# The API:
curl -X GET "https://10.63.26.252/api/protocols/file-security/effective-
permissions/cf5f271a-1beb-11ea-8fad-
005056bb645e/administrator/windows/%2F?share.name=sh1&return_records=true"
-H "accept: application/json" -H "authorization: Basic
YWRtaW46bmV0YXBwMSE="

# The response:
{
"svm": {
  "uuid": "cf5f271a-1beb-11ea-8fad-005056bb645e",
  "name": "vs1"
},
"user": "administrator",
"type": "windows",
"path": "/",
"share": {
  "path": "/"
},
"file_permission": [
  "read",
  "write",
  "append",
  "read_ea",
  "write_ea",
  "execute",
  "delete_child",
  "read_attributes",
  "write_attributes",
  "delete",
  "read_control",
  "write_dac",
  "write_owner",
  "synchronize",
  "system_security"
],
"share_permission": [
  "read",
  "read_ea",
  "execute",
  "read_attributes",
  "read_control",
  "synchronize"
]
}
```

Retrieve effective security permissions on a file

GET `/protocols/file-security/effective-permissions/{svm.uuid}/{path}`

Introduced In: 9.8

Retrieves effective security permissions on a file.

Related ONTAP commands

- `vserver security file-directory show-effective-permissions`

Parameters

Name	Type	In	Required	Description
path	string	path	True	File Path
user	string	query	True	User_Name
share.name	string	query	False	Share Name
type	string	query	False	User Type
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
file_permissions	array[string]	Specifies the effective permission granted to a user on the specified file or folder path.
path	string	Specifies the path of the file or the folder for which you want to display effective permissions. The path is relative to the SVM root volume. If "-share-name" is specified then path will be relative to the share path.

Name	Type	Description
share	share	
share_permissions	array[string]	Specifies the effective permission granted to a user on the specified file or folder path.
svm	svm_reference	SVM, applies only to SVM-scoped objects.
type	string	Specifies the user type. The following values are allowed: • windows - Windows user • unix - UNIX user
user	string	Specifies the user for which effective permission needs to be displayed for the specified path.

Example response


```
{
  "file_permissions": [
    "string"
  ],
  "path": "/dir1/dir2",
  "share": {
    "name": "string",
    "path": "string"
  },
  "share_permissions": [
    "string"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "user": "cifs1/administrator"
}
```


Error

```
Status: Default, Ontap error response codes | error code | description | |
---------- | ----------- | | 262278     | user is a required field | |
655865     | the specified path cannot be used if the file does not exist
| | 655470     | the specified share does not exist |
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

share

Name	Type	Description
name	string	Displays the file or directory effective permission for the mentioned user, only for files and directories contained where the specified path is relative to the root of the specified share. If this parameter is not specified, the SVM root volume is taken as the default. If this parameter is specified, the effective share permission of the user is also displayed. Wildcard query characters are not supported.
path	string	Displays the CIFS share path.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage file security permissions and audit policies

Protocols file-security permissions svm.uuid path endpoint overview

Overview

Using this API, You can manage NTFS file security and audit policies of file or directory without the need of a client. It works similar to what you could do with a cacls in windows client. It will create an NTFS security descriptor(SD) to which you can add access control entries (ACEs) to the discretionary access control list (DACL) and the system access control list (SACL). Generally, an SD contains following information:

- Security identifiers (SIDs) for the owner and primary group of an object. A security identifier (SID) is a unique value of variable length used to identify a trustee. Each account has a unique SID issued by an authority, such as a Windows domain controller, and is stored in a security database.
- A DACL identifies the trustees that are allowed or denied access to a securable object. When a process tries to access a securable object, the system checks the ACEs in the object's DACL to determine whether to grant access to it.
- A SACL enables administrators to log attempts to access a secured object. Each ACE specifies the types of access attempts by a specified trustee that cause the system to generate a record in the security event log. An ACE in a SACL can generate audit records when an access attempt fails, when it succeeds, or both.
- A set of control bits that qualify the meaning of a SD or its individual members.

Currently, in ONTAP CLI, creating and applying NTFS ACLs is a 5-step process:

- Create an SD.
- Add DACLs and SACLs to the NTFS SD. If you want to audit file and directory events, you must configure auditing on the Vserver, in addition, to adding a SACL to the SD.

- Create a file/directory security policy. This step associates the policy with a SVM.
- Create a policy task. A policy task refers to a single operation to apply to a file (or folder) or to a set of files (or folders). Among other things, the task defines which SD to apply to a path.
- Apply a policy to the associated SVM. If a permission denied error occurs while applying the policy, the policy is skipped for the relevant files (or folders) and the job continues.

This REST API to set the DACL/SACL is similar to the windows GUI. The approach used here has been simplified by combining all steps into a single step. The REST API uses only minimal and mandatory parameters to create access control entries (ACEs), which can be added to the discretionary access control list (DACL) and the system access control list (SACL). Based on information provided, SD is created and applied on the target path. A path within the FlexCache volume is not supported

Beginning with ONTAP 9.10.1, SLAG (Storage-Level Access Guard) ACLs can also be configured through these endpoints. SLAG is designed to be set on a volume or qtree. Storage-level security cannot be revoked from a client, not even by a system (Windows or UNIX) administrator. It is designed to be modified by storage administrators only, which precedes the share/export permission and the Windows ACLs or UNIX mode bits. Similar to configuring file-directory ACLs, configuring SLAG ACLs is also simplified by combining all steps into a single step.

Examples

Creating a new SD

Use this endpoint to apply a fresh set of SACLs and DACLs. A new SD is created based on the input parameters and it replaces the old SD for the given target path:

```
# The API:
POST /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X POST "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-
0050568e8682/%2Fparent?return_timeout=0" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"acls\": [ { \"access\": \"access_allow\",
\"advanced_rights\": { \"append_data\": true, \"delete\": true,
\"delete_child\": true, \"execute_file\": true, \"full_control\": true,
\"read_attr\": true, \"read_data\": true, \"read_ea\": true,
\"read_perm\": true, \"write_attr\": true, \"write_data\": true,
\"write_ea\": true, \"write_owner\": true, \"write_perm\": true },
\"apply_to\": { \"files\": true, \"sub_folders\": true, \"this_folder\":
true }, \"user\": \"administrator\" } ], \"control_flags\": \"32788\",
\"group\": \"S-1-5-21-2233347455-2266964949-1780268902-69700\",
\"ignore_paths\": [ \"/parent/child2\" ], \"owner\": \"S-1-5-21-
2233347455-2266964949-1780268902-69304\", \"propagation_mode\":
\"propagate\"}"

# The response:
{
"job": {
  "uuid": "3015c294-5bbc-11eb-9c4e-0050568e8682",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3015c294-5bbc-11eb-9c4e-0050568e8682"
    }
  }
}
}
```

Configuring a new set of SLAG DACLs and SACLs

Use this endpoint to apply a fresh set of SLAG DACLs and SACLs. A new SD is created based on the input parameters and it replaces the old SLAG permissions for the given target path:

```
# The API:
POST /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/file-
security/permissions/9f738ac5-c502-11eb-b82c-
0050568e5902/%2Ftest_vol?return_timeout=0" -H  "accept: application/json"
-H  "Content-Type: application/json" -d "{  \"access_control\": \"slag\",
\"acls\": [    {      \"access\": \"access_allow\",
\"advanced_rights\": {        \"append_data\": true,        \"delete\":
true,        \"delete_child\": true,        \"execute_file\": true,
\"full_control\": true,        \"read_attr\": true,        \"read_data\":
true,        \"read_ea\": true,        \"read_perm\": true,
\"write_attr\": true,        \"write_data\": true,        \"write_ea\":
true,        \"write_owner\": true,        \"write_perm\": true      },
\"apply_to\": {        \"files\": true,        \"sub_folders\": true,
\"this_folder\": true      },      \"user\": \"user1\"    },{
\"access\": \"audit_success\",      \"advanced_rights\": {
\"append_data\": true,        \"delete\": true,        \"delete_child\":
true,        \"execute_file\": true,        \"full_control\": true,
\"read_attr\": true,        \"read_data\": true,        \"read_ea\": true,
\"read_perm\": true,        \"write_attr\": true,        \"write_data\":
true,        \"write_ea\": true,        \"write_owner\": true,
\"write_perm\": true      },      \"apply_to\": {        \"files\": true,
\"sub_folders\": true,        \"this_folder\": true      },      \"user\":
\"user2\"    }  ]}"

# The response:
{
"job": {
  "uuid": "9938d743-d566-11eb-ad60-0050568e5902",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9938d743-d566-11eb-ad60-0050568e5902"
    }
  }
}
}
```

Retrieving file permissions

Use this endpoint to retrieve all the security and auditing information of a directory or file:

```
# The API:
GET /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X GET "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-0050568e8682/%2Fparent" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="

# The response:
{
"svm": {
  "uuid": "9479099d-5b9f-11eb-9c4e-0050568e8682",
  "name": "vs1"
},
"path": "/parent",
"owner": "BUILTIN\\Administrators",
"group": "BUILTIN\\Administrators",
"control_flags": "0x8014",
"acls": [
  {
    "user": "BUILTIN\\Administrators",
    "access": "access_allow",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
```

```
  },
  {
    "user": "BUILTIN\\Users",
    "access": "access_allow",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
  },
  {
    "user": "CREATOR OWNER",
    "access": "access_allow",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
```

```
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
  },
  {
    "user": "Everyone",
    "access": "access_allow",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
  },
  {
    "user": "NT AUTHORITY\\SYSTEM",
    "access": "access_allow",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
```

```
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
  },
  {
    "user": "user1",
    "access": "access_allow",
    "apply_to": {
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "slag"
  },
  {
    "user": "user1",
    "access": "access_allow",
```

```
    "apply_to": {
      "files": true,
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "slag"
  },
  {
    "user": "user2",
    "access": "audit_success",
    "apply_to": {
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
```

```
      "access_control": "slag"
    },
    {
      "user": "user2",
      "access": "audit_success",
      "apply_to": {
        "files": true,
      },
      "advanced_rights": {
        "append_data": true,
        "delete": true,
        "delete_child": true,
        "execute_file": true,
        "full_control": true,
        "read_attr": true,
        "read_data": true,
        "read_ea": true,
        "read_perm": true,
        "write_attr": true,
        "write_data": true,
        "write_ea": true,
        "write_owner": true,
        "synchronize": true,
        "write_perm": true
      },
      "access_control": "slag"
    }
  ],
  "inode": 64,
  "security_style": "mixed",
  "effective_style": "ntfs",
  "dos_attributes": "10",
  "text_dos_attr": "----D---",
  "user_id": "0",
  "group_id": "0",
  "mode_bits": 777,
  "text_mode_bits": "rwxrwxrwx"
  }
```


Configuring lookup_names in a GET request

When the value of lookup_names is set to false (the default value is true), the SID aren't translated into names:

```
# The API:
GET /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X GET "https://10.140.101.39/api/protocols/file-
security/permissions/bea90fd8-dc69-11ef-9cbd-
005056aeb209/%2Fvol01?lookup_names=false&fields=*" -H  "accept:
application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE="

# The response:
{
"svm": {
  "uuid": "bea90fd8-dc69-11ef-9cbd-005056aeb209",
  "name": "vs0"
},
"path": "/vol01",
"owner": "S-1-1-0",
"group": "S-1-1-0",
"control_flags": "0x8014",
"acls": [
  {
    "user": "S-1-5-21-1328775103-872486983-3699758552-1002",
    "access": "audit_failure",
    "apply_to": {
      "files": true,
      "sub_folders": true,
      "this_folder": true
    },
    "advanced_rights": {
      "append_data": true,
      "delete": true,
      "delete_child": true,
      "execute_file": true,
      "full_control": true,
      "read_attr": true,
      "read_data": true,
      "read_ea": true,
      "read_perm": true,
      "write_attr": true,
      "write_data": true,
      "write_ea": true,
      "write_owner": true,
      "synchronize": true,
      "write_perm": true
    },
    "access_control": "file_directory"
```

```
  }
],
"inode": 64,
"security_style": "mixed",
"effective_style": "ntfs",
"dos_attributes": "10",
"text_dos_attr": "----D---",
"user_id": "0",
"group_id": "0",
"mode_bits": 777,
"text_mode_bits": "rwxrwxrwx"
}
```

Updating SD-specific information

Use this end point to update the following information:

- Primary owner of the file/directory.
- Primary group of the file/directory.
- Control flags associated with with SD of the file/directory.

```
# The API:
PATCH /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X PATCH "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-
0050568e8682/%2Fparent?return_timeout=0" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"control_flags\": \"32788\", \"group\":
\"everyone\", \"owner\": \"user1\"}"

# The Response:
{
"job": {
  "uuid": "6f89e612-5bbd-11eb-9c4e-0050568e8682",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6f89e612-5bbd-11eb-9c4e-0050568e8682"
    }
  }
}
}
```

Removing all SLAG ACLs

Use this end point to remove all SLAG ACLs.

```
# The API:
DELETE /protocols/file-security/permissions/{svm.uuid}/{path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/file-
security/permissions/713f569f-d4bc-11eb-b24a-
005056ac6ce1/%2Ftest_vol?access_control=slag"
```

Adding a single file-directory DACL/SACL ACE

Use this endpoint to add a single SACL/DACL ACE for a new user or for an existing user with a different access type (allow or deny). The given ACE is merged with an existing SACL/DACL and based on the type of “propagation-mode”, it is reflected to the child object:

```
# The API:
POST /protocols/file-security/permissions/{svm.uuid}/{path}/acl

# The call:
curl -X POST "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-
0050568e8682/%2Fparent/acl?return_timeout=0&return_records=false" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H "Content-Type: application/json" -d "{ \"access\": \"access_allow\",
\"apply_to\": { \"files\": true, \"sub_folders\": true, \"this_folder\":
true }, \"ignore_paths\": [ \"/parent/child2\" ], \"propagation_mode\":
\"propagate\", \"rights\": \"read\", \"user\": \"example_user\"}"

# The Response:
{
"job": {
  "uuid": "26185a2f-5bbe-11eb-9c4e-0050568e8682",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/26185a2f-5bbe-11eb-9c4e-0050568e8682"
    }
  }
}
}
```

Adding a single SLAG DACL/SACL ACE

Use this endpoint to add a single SLAG SACL/DACL ACE to an existing set of ACLs for a user or for an existing user with a different access type (allow or deny).

```
# The API:
POST /protocols/file-security/permissions/{svm.uuid}/{path}/acl

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/file-
security/permissions/713f569f-d4bc-11eb-b24a-
005056ac6ce1/%2Ftest_vol/acl?return_timeout=0&return_records=false" -H
"accept: application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H  "Content-Type: application/json" -d "{  \"access\": \"access_allow\",
\"access_control\": \"slag\",  \"advanced_rights\": {    \"append_data\":
true,    \"delete\": true,    \"delete_child\": true,    \"execute_file\":
true,    \"full_control\": true,    \"read_attr\": true,    \"read_data\":
true,    \"read_ea\": true,    \"read_perm\": true,    \"write_attr\":
true,    \"write_data\": true,    \"write_ea\": true,    \"write_owner\":
true,    \"write_perm\": true  },  \"apply_to\": {    \"files\": true,
\"sub_folders\": true,    \"this_folder\": true  },  \"user\": \"user1\"}"

# The Response:
{
"job": {
  "uuid": "7fa5f53f-d570-11eb-b24a-005056ac6ce1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/7fa5f53f-d570-11eb-b24a-005056ac6ce1"
    }
  }
}
}
```

Updating existing SACL/DACL ACE

Use this endpoint to update the rights/advanced rights for an existing user, for a specified path. You cannot update the access type using this end point. Based on the type of “propagation-mode”, it is reflected to the child object:

```
# The API:
PATCH /protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}
The Call:
curl -X PATCH "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-
0050568e8682/%2Fparent/acl/himanshu?return_timeout=0" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE=" -H
"Content-Type: application/json" -d "{ \"access\": \"access_allow\",
\"advanced_rights\": { \"append_data\": true, \"delete\": true,
\"delete_child\": true, \"execute_file\": true, \"full_control\": true,
\"read_attr\": false, \"read_data\": false, \"read_ea\": false,
\"read_perm\": false, \"write_attr\": true, \"write_data\": true,
\"write_ea\": true, \"write_owner\": true, \"write_perm\": true },
\"apply_to\": { \"files\": true, \"sub_folders\": true, \"this_folder\":
true }, \"ignore_paths\": [ \"/parent/child2\" ], \"propagation_mode\":
\"propagate\"}"
The Response:
{
"job": {
  "uuid": "72067401-5bbf-11eb-9c4e-0050568e8682",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/72067401-5bbf-11eb-9c4e-0050568e8682"
    }
  }
}
}
```

Updating an existing SLG SACL/DACL ACE

Use this endpoint to update the SLAG rights/advanced rights for an existing user, for a specified path. You cannot update the access type using this end point.

```
# The API:
PATCH /protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}
The Call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/file-
security/permissions/713f569f-d4bc-11eb-b24a-
005056ac6ce1/%2Ftest_vol/acl/user1?return_records=false&return_timeout=0"
-H  "accept: application/json" -H  "authorization: Basic
YWRtaW46bmV0YXBwMSE=" -H  "Content-Type: application/json" -d "{
\"access\": \"access_allow\",  \"access_control\": \"slag\",
\"apply_to\": {    \"files\": true,    \"sub_folders\": true,
\"this_folder\": true  },  \"rights\": \"read\"}"
The Response:
{
"job": {
  "uuid": "3d21abcd-d571-11eb-b24a-005056ac6ce1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3d21abcd-d571-11eb-b24a-005056ac6ce1"
    }
  }
}
}
```

Deleting an existing SACL/DACL ACE

Use this endpoint to delete any of the existing rights/advanced_rights for a user. Based on the type of “propagation-mode”, it is reflected to the child object:

```
# The API:
DELETE /protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}

# The call:
curl -X DELETE "https://10.140.101.39/api/protocols/file-
security/permissions/9479099d-5b9f-11eb-9c4e-
0050568e8682/%2Fparent/acl/himanshu?return_timeout=0" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE=" -H
"Content-Type: application/json" -d "{ \"access\": \"access_allow\",
\"apply_to\": { \"files\": true, \"sub_folders\": true, \"this_folder\":
true }, \"ignore_paths\": [ \"/parent/child2\" ], \"propagation_mode\":
\"propagate\"}"

# The response:
{
"job": {
  "uuid": "e5683b61-5bbf-11eb-9c4e-0050568e8682",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e5683b61-5bbf-11eb-9c4e-0050568e8682"
    }
  }
}
}
```

Deleting an existing SLAG SACL/DACL ACE

Use this endpoint to delete any SLAG ACE for a user.

```
# The API:
DELETE /protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/file-
security/permissions/713f569f-d4bc-11eb-b24a-
005056ac6ce1/%2Ftest_vol/acl/user1?return_records=false&return_timeout=0"
-H  "accept: application/json" -H  "authorization: Basic
YWRtaW46bmV0YXBwMSE=" -H  "Content-Type: application/json" -d "{
\"access\": \"access_allow\",  \"access_control\": \"slag\",
\"apply_to\": {    \"files\": true,    \"sub_folders\": true,
\"this_folder\": true  }}"

# The response:
{
"job": {
  "uuid": "10c29534-d572-11eb-b24a-005056ac6ce1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/10c29534-d572-11eb-b24a-005056ac6ce1"
    }
  }
}
}
```

Remove all SLAG ACLs for a path

DELETE `/protocols/file-security/permissions/{svm.uuid}/{path}`

Introduced In: 9.10

Remove all SLAG ACLs for specified path. Bulk deletion is supported only for SLAG
You must keep the following points in mind while using these endpoints:

- Do not pass additional arguments that are not required.

Related ONTAP Commands

- `vserver security file-directory remove-slag`

Parameters

Name	Type	In	Required	Description
path	string	path	True	target path

Name	Type	In	Required	Description
access_control	string	query	False	Remove all SLAG ACLs. Currently bulk deletion of file-directory ACLs is not supported. • enum: ["slag"]
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
10485811	Access is a required field.
1260882	Specified SVM not found.
6691623	User is not authorized.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve file permissions

GET `/protocols/file-security/permissions/{svm.uuid}/{path}`

Introduced In: 9.9

Retrieves file permissions.

Related ONTAP commands

- `vserver security file-directory show`

Parameters

Name	Type	In	Required	Description
path	string	path	True	target path
lookup_names	boolean	query	False	Translate security identifiers into names. • Introduced in: 9.17
fields	array[string]	query	False	Specify the fields to return.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
acls	array[acl]	A discretionary access security list (DACL) identifies the trustees that are allowed or denied access to a securable object. When a process tries to access a securable object, the system checks the access control entries (ACEs) in the object's DACL to determine whether to grant access to it.
control_flags	string	Specifies the control flags in the SD. It is a Hexadecimal Value.

Name	Type	Description
dos_attributes	string	Specifies the file attributes on this file or directory.
effective_style	string	Specifies the effective style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
group	string	Specifies the owner's primary group. You can specify the owner group using either a group name or SID.
group_id	string	Specifies group ID on this file or directory.
inode	integer	Specifies the File Inode number.
mode_bits	integer	Specifies the mode bits on this file or directory.
owner	string	Specifies the owner of the SD. You can specify the owner using either a user name or security identifier (SID). The owner of the SD can modify the permissions on the file (or folder) or files (or folders) to which the SD is applied and can give other users the right to take ownership of the object or objects to which the SD is applied.
security_style	string	Specifies the security style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style

Name	Type	Description
text_dos_attr	string	Specifies the textual format of file attributes on this file or directory.
text_mode_bits	string	Specifies the textual format of mode bits on this file or directory.
user_id	string	Specifies user ID of this file or directory.

Example response


```
{
  "acls": [
    {
      "access": "access_allow",
      "access_control": "file_directory",
      "inherited": 1,
      "rights": "full_control",
      "user": "S-1-5-21-2233347455-2266964949-1780268902-69304"
    }
  ],
  "control_flags": "8014",
  "dos_attributes": "10",
  "effective_style": "mixed",
  "group": "S-1-5-21-2233347455-2266964949-1780268902-69700",
  "group_id": "2",
  "inode": 64,
  "mode_bits": 777,
  "owner": "S-1-5-21-2233347455-2266964949-1780268902-69304",
  "security_style": "ntfs",
  "text_dos_attr": "---A----",
  "text_mode_bits": "rwxrwxrwx",
  "user_id": "10"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

advanced_rights

Specifies the advanced access right controlled by the ACE for the account specified.
You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
append_data	boolean	Append DAta
delete	boolean	Delete
delete_child	boolean	Delete Child
execute_file	boolean	Execute File
full_control	boolean	Full Control
read_attr	boolean	Read Attributes
read_data	boolean	Read Data
read_ea	boolean	Read Extended Attributes
read_perm	boolean	Read Permissions
synchronize	boolean	Synchronize
write_attr	boolean	Write Attributes
write_data	boolean	Write Data
write_ea	boolean	Write Extended Attributes
write_owner	boolean	Write Owner
write_perm	boolean	Write Permission

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files

Name	Type	Description
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

acl

An ACE is an element in an access control list (ACL).
An ACL can have zero or more ACEs. Each ACE controls or monitors access to an object by a specified trustee.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • access_allowed_callback - CALLBACK for allowed access • access_denied_callback - CALLBACK for denied access • access_allowed_callback_object - CALLBACK OBJECT for allowed access • access_denied_callback_object - CALLBACK OBJECT for denied access • system_audit_callback - SYSTEM Audit Callback ace • system_audit_callback_object - SYSTEM Audit Callback Object ace • system_resource_attribute - SYSTEM Resource Attribute • system_scoped_policy_id - SYSTEM Scope Policy ID • audit_success - SACL for success access • audit_failure - SACL for failure access • audit_success_and_failure - SACL for both success and failure access

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.
inherited	boolean	Indicates whether or not the ACE flag is inherited.
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).
user	string	Specifies the account to which the ACE applies. You can specify either name or SID.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the SD information

PATCH `/protocols/file-security/permissions/{svm.uuid}/{path}`

Introduced In: 9.9

Updates SD specific Information. For example, owner, group and control-flags. SD specific information of SLAG ACLs is not modifiable.

Related ONTAP commands

- `vserver security file-directory ntfs modify`

Parameters

Name	Type	In	Required	Description
path	string	path	True	target path

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
control_flags	string	Specifies the control flags in the SD. It is a Hexadecimal Value.
dos_attributes	string	Specifies the file attributes on this file or directory.

Name	Type	Description
effective_style	string	Specifies the effective style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
group	string	Specifies the owner's primary group. You can specify the owner group using either a group name or SID.
group_id	string	Specifies group ID on this file or directory.
inode	integer	Specifies the File Inode number.
mode_bits	integer	Specifies the mode bits on this file or directory.
owner	string	Specifies the owner of the SD. You can specify the owner using either a user name or security identifier (SID). The owner of the SD can modify the permissions on the file (or folder) or files (or folders) to which the SD is applied and can give other users the right to take ownership of the object or objects to which the SD is applied.
security_style	string	Specifies the security style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
text_dos_attr	string	Specifies the textual format of file attributes on this file or directory.

Name	Type	Description
text_mode_bits	string	Specifies the textual format of mode bits on this file or directory.
user_id	string	Specifies user ID of this file or directory.

Example request

```
{
  "control_flags": "8014",
  "dos_attributes": "10",
  "effective_style": "mixed",
  "group": "S-1-5-21-2233347455-2266964949-1780268902-69700",
  "group_id": "2",
  "inode": 64,
  "mode_bits": 777,
  "owner": "S-1-5-21-2233347455-2266964949-1780268902-69304",
  "security_style": "ntfs",
  "text_dos_attr": "---A----",
  "text_mode_bits": "rwxrwxrwx",
  "user_id": "10"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.
10485814	The value provided for field control_flags is invalid.

Definitions

See Definitions

advanced_rights

Specifies the advanced access right controlled by the ACE for the account specified.
You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
append_data	boolean	Append DAta
delete	boolean	Delete
delete_child	boolean	Delete Child
execute_file	boolean	Execute File
full_control	boolean	Full Control
read_attr	boolean	Read Attributes
read_data	boolean	Read Data
read_ea	boolean	Read Extended Attributes
read_perm	boolean	Read Permissions
synchronize	boolean	Synchronize
write_attr	boolean	Write Attributes
write_data	boolean	Write Data
write_ea	boolean	Write Extended Attributes
write_owner	boolean	Write Owner
write_perm	boolean	Write Permission

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files

Name	Type	Description
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

acl

An ACE is an element in an access control list (ACL).
An ACL can have zero or more ACEs. Each ACE controls or monitors access to an object by a specified trustee.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • access_allowed_callback - CALLBACK for allowed access • access_denied_callback - CALLBACK for denied access • access_allowed_callback_object - CALLBACK OBJECT for allowed access • access_denied_callback_object - CALLBACK OBJECT for denied access • system_audit_callback - SYSTEM Audit Callback ace • system_audit_callback_object - SYSTEM Audit Callback Object ace • system_resource_attribute - SYSTEM Resource Attribute • system_scoped_policy_id - SYSTEM Scope Policy ID • audit_success - SACL for success access • audit_failure - SACL for failure access • audit_success_and_failure - SACL for both success and failure access

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
inherited	boolean	Indicates whether or not the ACE flag is inherited.
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).

file_directory_security

Manages New Technology File System (NTFS) security and NTFS audit policies.

Name	Type	Description
control_flags	string	Specifies the control flags in the SD. It is a Hexadecimal Value.
dos_attributes	string	Specifies the file attributes on this file or directory.
effective_style	string	Specifies the effective style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
group	string	Specifies the owner's primary group. You can specify the owner group using either a group name or SID.
group_id	string	Specifies group ID on this file or directory.
inode	integer	Specifies the File Inode number.
mode_bits	integer	Specifies the mode bits on this file or directory.
owner	string	Specifies the owner of the SD. You can specify the owner using either a user name or security identifier (SID). The owner of the SD can modify the permissions on the file (or folder) or files (or folders) to which the SD is applied and can give other users the right to take ownership of the object or objects to which the SD is applied.

Name	Type	Description
security_style	string	Specifies the security style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
text_dos_attr	string	Specifies the textual format of file attributes on this file or directory.
text_mode_bits	string	Specifies the textual format of mode bits on this file or directory.
user_id	string	Specifies user ID of this file or directory.

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Apply an SD to a path

POST `/protocols/file-security/permissions/{svm.uuid}/{path}`

Introduced In: 9.9

Applies an SD to the given path.
You must keep the following points in mind while using these endpoints:

- Either SLAG ACL/s or file-directory ACL/s can be configured in one API call. Both cannot be configured in the same API call.
- SLAG applies to all files and/or directories in a volume hence, inheritance is not required to be propagated.
- Set access_control field to slag while configuring SLAG ACLs.
- Set access_control field to file_directory while configuring file-directory ACLs. By Default access_control field is set to file_directory.
- For SLAG, valid apply_to combinations are "this-folder, sub-folders", "files", "this-folder, sub-folders, files".

Related ONTAP commands

- `vserver security file-directory ntfs create`
- `vserver security file-directory ntfs dacl add`
- `vserver security file-directory ntfs sacl add`
- `vserver security file-directory policy create`
- `vserver security file-directory policy task add`
- `vserver security file-directory apply`

Parameters

Name	Type	In	Required	Description
path	string	path	True	target path

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
acls	array[acl]	A discretionary access security list (DACL) identifies the trustees that are allowed or denied access to a securable object. When a process tries to access a securable object, the system checks the access control entries (ACEs) in the object's DACL to determine whether to grant access to it.
control_flags	string	Specifies the control flags in the SD. It is a Hexadecimal Value.
dos_attributes	string	Specifies the file attributes on this file or directory.
effective_style	string	Specifies the effective style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
group	string	Specifies the owner's primary group. You can specify the owner group using either a group name or SID.

Name	Type	Description
group_id	string	Specifies group ID on this file or directory.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
inode	integer	Specifies the File Inode number.
mode_bits	integer	Specifies the mode bits on this file or directory.
owner	string	Specifies the owner of the SD. You can specify the owner using either a user name or security identifier (SID). The owner of the SD can modify the permissions on the file (or folder) or files (or folders) to which the SD is applied and can give other users the right to take ownership of the object or objects to which the SD is applied.
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions

Name	Type	Description
security_style	string	Specifies the security style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
text_dos_attr	string	Specifies the textual format of file attributes on this file or directory.
text_mode_bits	string	Specifies the textual format of mode bits on this file or directory.
user_id	string	Specifies user ID of this file or directory.

Example request

```
{
  "access_control": "file_directory",
  "acls": [
    {
      "access": "access_allow",
      "access_control": "file_directory",
      "inherited": 1,
      "rights": "full_control",
      "user": "S-1-5-21-2233347455-2266964949-1780268902-69304"
    }
  ],
  "control_flags": "8014",
  "dos_attributes": "10",
  "effective_style": "mixed",
  "group": "S-1-5-21-2233347455-2266964949-1780268902-69700",
  "group_id": "2",
  "ignore_paths": [
    "/dir1/dir2/",
    "/parent/dir3"
  ],
  "inode": 64,
  "mode_bits": 777,
  "owner": "S-1-5-21-2233347455-2266964949-1780268902-69304",
  "propagation_mode": "propagate",
  "security_style": "ntfs",
  "text_dos_attr": "---A----",
  "text_mode_bits": "rwxrwxrwx",
  "user_id": "10"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
10485813	All values corresponding to rights cannot be false.
10485815	The field "acls.access_control" is not allowed with POST method.
10485810	User is a required field.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.
4849677	Failed to convert SID to a Windows name. Reason: "SecD Error: object not found".
10485814	The value provided for field control_flags is invalid.
10485813	All values cannot be false.

See Definitions

advanced_rights

Specifies the advanced access right controlled by the ACE for the account specified.
You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
append_data	boolean	Append DAta
delete	boolean	Delete
delete_child	boolean	Delete Child
execute_file	boolean	Execute File
full_control	boolean	Full Control
read_attr	boolean	Read Attributes
read_data	boolean	Read Data
read_ea	boolean	Read Extended Attributes
read_perm	boolean	Read Permissions
synchronize	boolean	Synchronize
write_attr	boolean	Write Attributes
write_data	boolean	Write Data
write_ea	boolean	Write Extended Attributes
write_owner	boolean	Write Owner
write_perm	boolean	Write Permission

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files

Name	Type	Description
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

acl

An ACE is an element in an access control list (ACL).
An ACL can have zero or more ACEs. Each ACE controls or monitors access to an object by a specified trustee.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • access_allowed_callback - CALLBACK for allowed access • access_denied_callback - CALLBACK for denied access • access_allowed_callback_object - CALLBACK OBJECT for allowed access • access_denied_callback_object - CALLBACK OBJECT for denied access • system_audit_callback - SYSTEM Audit Callback ace • system_audit_callback_object - SYSTEM Audit Callback Object ace • system_resource_attribute - SYSTEM Resource Attribute • system_scoped_policy_id - SYSTEM Scope Policy ID • audit_success - SACL for success access • audit_failure - SACL for failure access • audit_success_and_failure - SACL for both success and failure access

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
inherited	boolean	Indicates whether or not the ACE flag is inherited.
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).

Name	Type	Description
user	string	Specifies the account to which the ACE applies. You can specify either name or SID.

file_directory_security

Manages New Technology File System (NTFS) security and NTFS audit policies.

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
acls	array[acl]	A discretionary access security list (DACL) identifies the trustees that are allowed or denied access to a securable object. When a process tries to access a securable object, the system checks the access control entries (ACEs) in the object's DACL to determine whether to grant access to it.
control_flags	string	Specifies the control flags in the SD. It is a Hexadecimal Value.
dos_attributes	string	Specifies the file attributes on this file or directory.

Name	Type	Description
effective_style	string	Specifies the effective style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
group	string	Specifies the owner's primary group. You can specify the owner group using either a group name or SID.
group_id	string	Specifies group ID on this file or directory.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
inode	integer	Specifies the File Inode number.
mode_bits	integer	Specifies the mode bits on this file or directory.
owner	string	Specifies the owner of the SD. You can specify the owner using either a user name or security identifier (SID). The owner of the SD can modify the permissions on the file (or folder) or files (or folders) to which the SD is applied and can give other users the right to take ownership of the object or objects to which the SD is applied.

Name	Type	Description
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions
security_style	string	Specifies the security style of the SD. The following values are supported: • unix - UNIX style • ntfs - NTFS style • mixed - Mixed style • unified - Unified style
text_dos_attr	string	Specifies the textual format of file attributes on this file or directory.
text_mode_bits	string	Specifies the textual format of mode bits on this file or directory.
user_id	string	Specifies user ID of this file or directory.

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a new SACL or DACL ACE

POST `/protocols/file-security/permissions/{svm.uuid}/{path}/acl`

Introduced In: 9.9

Adds the new SACL/DACL ACE.
You must keep the following points in mind while using these endpoints:

- SLAG applies to all files and/or directories in a volume hence, inheritance is not required to be propagated.
- Set access_control field to slag while adding SLAG ACE.
- Set access_control field to file_directory while adding file-directory ACE. By Default access_control field is set to file_directory.
- For SLAG, valid apply_to combinations are "this-folder, sub-folders", "files", "this-folder, sub-folders, files".

Required properties

- `user` - Name of the user to which the ACE applies.
- `access` - Specifies whether the ACE is for DACL or SACL.

Related ONTAP commands

- `vserver security file-directory ntfs dacl add`
- `vserver security file-directory ntfs sacl add`

Parameters

Name	Type	In	Required	Description
path	string	path	True	path
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access
access_control	string	Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).
user	string	Specifies the account to which the ACE applies. You can specify either name or SID.

Example request

```
{
  "access": "access_allow",
  "access_control": "file_directory",
  "ignore_paths": [
    "/dir1/dir2/",
    "/parent/dir3"
  ],
  "propagation_mode": "string",
  "rights": "full_control",
  "user": "S-1-5-21-2233347455-2266964949-1780268902-69304"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
10485811	Access is a required field.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.
10485810	User is a required field.
10485813	All values cannot be false.

Definitions

See Definitions

advanced_rights

Specifies the advanced access right controlled by the ACE for the account specified.
You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
append_data	boolean	Append DAta
delete	boolean	Delete
delete_child	boolean	Delete Child
execute_file	boolean	Execute File
full_control	boolean	Full Control
read_attr	boolean	Read Attributes
read_data	boolean	Read Data
read_ea	boolean	Read Extended Attributes
read_perm	boolean	Read Permissions
synchronize	boolean	Synchronize
write_attr	boolean	Write Attributes
write_data	boolean	Write Data
write_ea	boolean	Write Extended Attributes
write_owner	boolean	Write Owner
write_perm	boolean	Write Permission

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files

Name	Type	Description
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

file_directory_security_acl

Manages the DACLS or SACLS.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access
access_control	string	Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).
user	string	Specifies the account to which the ACE applies. You can specify either name or SID.

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a SACL or DACL ACL

DELETE `/protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}`

Introduced In: 9.9

Deletes the SACL/DACL ACL
You must keep the following points in mind while using these endpoints:

- SLAG applies to all files and/or directories in a volume hence, inheritance is not required to be propagated.
- Set access_control field to slag while deleting SLAG ACE.

- Set access_control field to file_directory while deleting file-directory ACE. By Default access_control field is set to file_directory.
- For SLAG, valid apply_to combinations are "this-folder, sub-folders", "files", "this-folder, sub-folders, files".

Required properties

- `access` - Specifies whether the ACE is for DACL or SACL.
- `user` - Name of the user to which the ACE applies.

Related ONTAP commands

- `vserver security file-directory ntfs dacl remove`
- `vserver security file-directory ntfs sacl remove`

Parameters

Name	Type	In	Required	Description
path	string	path	True	path
user	string	path	True	User Name
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.

Name	Type	Description
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • replace - replace existing permissions on all subfolders and files with inheritable permissions

Example request

```
{
  "access": "access_allow",
  "access_control": "file_directory",
  "ignore_paths": [
    "/dir1/dir2/",
    "/parent/dir3"
  ],
  "propagation_mode": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
10485811	Access is a required field.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.
10485813	All values cannot be false.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

acl_delete

Manages the DACLS or SACLS.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access

Name	Type	Description
access_control	string	An Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • replace - replace existing permissions on all subfolders and files with inheritable permissions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update SACLs or DACLs

PATCH `/protocols/file-security/permissions/{svm.uuid}/{path}/acl/{user}`

Introduced In: 9.9

Updates the SACLs/DACLs
You must keep the following points in mind while using these endpoints:

- SLAG applies to all files and/or directories in a volume hence, inheritance is not required to be propagated.
- Set access_control field to slag while updating SLAG ACE.
- Set access_control field to file_directory while updating file-directory ACE. By Default access_control field is set to file_directory.
- For SLAG, valid apply_to combinations are "this-folder, sub-folders", "files", "this-folder, sub-folders, files".

Required properties

- `access` - Specifies whether the ACE is for DACL or SACL.
- `user` - Name of the user to which the ACE applies.

Related ONTAP commands

- `vserver security file-directory ntfs dacl modify`
- `vserver security file-directory ntfs sacl modify`

Parameters

Name	Type	In	Required	Description
path	string	path	True	path
user	string	path	True	User Name
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access
access_control	string	Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.

Name	Type	Description
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).

Example request

```
{
  "access": "access_allow",
  "access_control": "file_directory",
  "ignore_paths": [
    "/dir1/dir2/",
    "/parent/dir3"
  ],
  "propagation_mode": "string",
  "rights": "full_control"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
655865	The specified file or directory does not exist.
10485811	Access is a required field.
1260882	Specified SVM not found.
6691623	User is not authorized.
4849676	The specified Windows user or group does not exist.
10485813	All values cannot be false.

Definitions

See Definitions

advanced_rights

Specifies the advanced access right controlled by the ACE for the account specified.
You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
append_data	boolean	Append DAta
delete	boolean	Delete
delete_child	boolean	Delete Child
execute_file	boolean	Execute File
full_control	boolean	Full Control
read_attr	boolean	Read Attributes
read_data	boolean	Read Data
read_ea	boolean	Read Extended Attributes
read_perm	boolean	Read Permissions
synchronize	boolean	Synchronize
write_attr	boolean	Write Attributes
write_data	boolean	Write Data
write_ea	boolean	Write Extended Attributes
write_owner	boolean	Write Owner
write_perm	boolean	Write Permission

apply_to

Specifies where to apply the DACL or SACL entries.
You can specify more than one value by using a comma-delimited list.

Name	Type	Description
files	boolean	Apply to Files

Name	Type	Description
sub_folders	boolean	Apply to all sub-folders
this_folder	boolean	Apply only to this folder

file_directory_security_acl

Manages the DACLS or SACLS.

Name	Type	Description
access	string	Specifies whether the ACL is for DACL or SACL. It is a required field. The available values are: • access_allow - DACL for allow access • access_deny - DACL for deny access • audit_success - SACL for success access • audit_failure - SACL for failure access
access_control	string	Access Control Level specifies the access control of the task to be applied. Valid values are "file-directory" or "Storage-Level Access Guard (SLAG)". SLAG is used to apply the specified security descriptors with the task for the volume or qtree. Otherwise, the security descriptors are applied on files and directories at the specified path. The value SLAG is not supported on FlexGroups volumes. The default value is "file-directory" ('-' and '_' are interchangeable).
advanced_rights	advanced_rights	Specifies the advanced access right controlled by the ACE for the account specified. You can specify more than one "advanced-rights" value by using a comma-delimited list.

Name	Type	Description
apply_to	apply_to	Specifies where to apply the DACL or SACL entries. You can specify more than one value by using a comma-delimited list.
ignore_paths	array[string]	Specifies that permissions on this file or directory cannot be replaced.
propagation_mode	string	Specifies how to propagate security settings to child subfolders and files. This setting determines how child files/folders contained within a parent folder inherit access control and audit information from the parent folder. The available values are: • propagate - propagate inheritable permissions to all subfolders and files • ignore - ignore inheritable permissions • replace - replace existing permissions on all subfolders and files with inheritable permissions
rights	string	Specifies the access rights controlled by the ACE for the account specified. The "rights" parameter is mutually exclusive with the "advanced_rights" parameter. If you specify the "rights" parameter, you can specify one of the following "rights" values ("-" or "_" is accepted as the delimiter).

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FPolicy configuration

Protocols fpolicy endpoint overview

Overview

FPolicy is an infrastructure component of ONTAP that enables partner applications to connect to ONTAP in order to monitor and set file access permissions. Every time a client accesses a file from a storage system, based on the configuration of FPolicy, the partner application is notified about file access. This enables partners to set restrictions on files that are created or accessed on the storage system. FPolicy also allows you to create file policies that specify file operation permissions according to file type. For example, you can restrict certain file types, such as .jpeg and .mp3 files, from being stored on the storage system. FPolicy can monitor file access from CIFS and NFS clients.

As part of FPolicy configuration, you can specify an FPolicy engine which defines the external FPolicy server, FPolicy events, which defines the protocol and file operations to monitor and the FPolicy policy that acts as a container for the FPolicy engine and FPolicy events. It provides a way for policy management functions, such as policy enabling and disabling.

Examples

Creating an FPolicy configuration

To create an FPolicy for an SVM use the following API. Note that the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /protocols/fpolicy/

#The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy?return_records=true"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"engines\": [ { \"name\": \"engine1\", \"port\": 9876,
\"primary_servers\": [ \"10.132.145.22\", \"10.140.101.109\" ],
\"secondary_servers\": [ \"10.132.145.20\", \"10.132.145.21\" ], \"type\":
\"synchronous\", \"format\": \"xml\" } ], \"events\": [ {
\"file_operations\": { \"read\": true, \"write\": true }, \"filters\": {
\"monitor_ads\": true }, \"name\": \"event_cifs\", \"protocol\": \"cifs\",
\"volume_monitoring\": true } ], \"policies\": [ { \"engine\": { \"name\":
\"engine1\" }, \"events\": [ { \"name\": \"event_cifs\" } ],
\"mandatory\": true, \"name\": \"pol0\", \"priority\": 1, \"scope\": {
\"include_volumes\": [ \"vol1\" ] } } ], \"persistent_stores\": [ {
\"name\": \"ps1\", \"volume\": \"psvol\" ,\"size\": 1073741824,
\"autosize_mode\": \"off\"} ], \"svm\": { \"name\": \"vs1\", \"uuid\":
\"b34f5e3d-01d0-11e9-8f63-0050568ea311\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "b34f5e3d-01d0-11e9-8f63-0050568ea311",
      "name": "vs1"
    },
    "engines": [
      {
        "name": "engine1",
        "primary_servers": [
          "10.132.145.22",
          "10.140.101.109"
        ],
        "secondary_servers": [
          "10.132.145.20",
          "10.132.145.21"
        ],
```

```
        "type": "synchronous",
        "port": 9876,
        "format": "xml"
      }
    ],
      "events": [
      {
        "name": "event_cifs",
        "protocol": "cifs",
        "volume_monitoring": true,
        "file_operations": {
          "read": true,
          "write": true
        },
        "filters": {
          "monitor_ads": true
        }
      }
    ],
    "policies": [
      {
        "name": "pol0",
        "priority": 1,
        "events": [
          {
            "name": "event_cifs"
          }
        ],
        "engine": {
          "name": "engine1"
        },
        "scope": {
          "include_volumes": [
            "vol1"
          ]
        },
        "mandatory": true
      }
    ],
    "persistent_stores": [
      {
        "name": "ps1",
        "volume": "psvol",
        "size": 1073741824,
        "autosize_mode": "off"
      }
```

```
    ]
  }
]
}
```

Retrieving the FPolicy configuration for all the SVMs in the cluster

```
# The API:
GET /protocols/fpolicy

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/fpolicy?fields=*&return_records=true&return_timeout=15"
-H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "b34f5e3d-01d0-11e9-8f63-0050568ea311",
      "name": "vs1"
    },
    "engines": [
      {
        "name": "engine1",
        "primary_servers": [
          "10.132.145.22",
          "10.140.101.109"
        ],
        "secondary_servers": [
          "10.132.145.20",
          "10.132.145.21"
        ],
        "type": "synchronous",
        "port": 9876,
        "format": "xml"
      }
    ],
    "events": [
      {
        "name": "event_cifs",
```

```
        "protocol": "cifs",
        "volume_monitoring": true,
        "file_operations": {
          "close": false,
          "create": false,
          "create_dir": false,
          "delete": false,
          "delete_dir": false,
          "getattr": false,
          "link": false,
          "lookup": false,
          "open": false,
          "read": true,
          "write": true,
          "rename": false,
          "rename_dir": false,
          "setattr": false,
          "symlink": false
        },
        "filters": {
          "monitor_ads": true,
          "close_with_modification": false,
          "close_without_modification": false,
          "close_with_read": false,
          "first_read": false,
          "first_write": false,
          "offline_bit": false,
          "open_with_delete_intent": false,
          "open_with_write_intent": false,
          "write_with_size_change": false,
          "setattr_with_owner_change": false,
          "setattr_with_group_change": false,
          "setattr_with_sacl_change": false,
          "setattr_with_dacl_change": false,
          "setattr_with_modify_time_change": false,
          "setattr_with_access_time_change": false,
          "setattr_with_creation_time_change": false,
          "setattr_with_mode_change": false,
          "setattr_with_size_change": false,
          "setattr_with_allocation_size_change": false,
          "exclude_directory": false
        }
      }
    ],
    "policies": [
      {
```

```
        "name": "pol0",
        "enabled": true,
        "priority": 1,
        "events": [
          {
            "name": "event_cifs"
          }
        ],
        "engine": {
          "name": "engine1"
        },
        "scope": {
          "include_volumes": [
            "vol1"
          ]
        },
        "mandatory": true,
        "passthrough_read": false,
        "allow_privileged_access": false,
        "persistent_store": "ps1"
      }
    ],
    "persistent_stores": [
      {
        "name": "ps1",
        "volume": "psvol",
        "size": 1073741824,
        "autosize_mode": "off"
      }
    ]
  }
],
"num_records": 1
}
```


Retrieving an FPolicy configuration for a particular SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/b34f5e3d-01d0-11e9-
```

```
8f63-0050568ea311?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"svm": {
  "uuid": "b34f5e3d-01d0-11e9-8f63-0050568ea311",
  "name": "vs1"
},
"engines": [
  {
    "name": "engine1",
    "primary_servers": [
      "10.132.145.22",
      "10.140.101.109"
    ],
    "secondary_servers": [
      "10.132.145.20",
      "10.132.145.21"
    ],
    "type": "synchronous",
    "port": 9876,
    "format": "xml"
  }
],
"events": [
  {
    "name": "event_cifs",
    "protocol": "cifs",
    "volume_monitoring": true,
    "file_operations": {
      "close": false,
      "create": false,
      "create_dir": false,
      "delete": false,
      "delete_dir": false,
      "getattr": false,
      "link": false,
      "lookup": false,
      "open": false,
      "read": true,
      "write": true,
      "rename": false,
      "rename_dir": false,
      "setattr": false,
      "symlink": false
```

```
    },
    "filters": {
      "monitor_ads": true,
      "close_with_modification": false,
      "close_without_modification": false,
      "close_with_read": false,
      "first_read": false,
      "first_write": false,
      "offline_bit": false,
      "open_with_delete_intent": false,
      "open_with_write_intent": false,
      "write_with_size_change": false,
      "setattr_with_owner_change": false,
      "setattr_with_group_change": false,
      "setattr_with_sacl_change": false,
      "setattr_with_dacl_change": false,
      "setattr_with_modify_time_change": false,
      "setattr_with_access_time_change": false,
      "setattr_with_creation_time_change": false,
      "setattr_with_mode_change": false,
      "setattr_with_size_change": false,
      "setattr_with_allocation_size_change": false,
      "exclude_directory": false
    }
  }
],
"policies": [
  {
    "name": "pol0",
    "enabled": true,
    "priority": 1,
    "events": [
      {
        "name": "event_cifs"
      }
    ],
    "engine": {
      "name": "engine1"
    },
    "scope": {
      "include_volumes": [
        "vol1"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
```

```
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  }
],
"persistent_stores": [
  {
    "name": "ps1",
    "volume": "psvol",
    "size": 1073741824,
    "autosize_mode": "off"
  }
]
}
```

Deleting an FPolicy configuration for a particular SVM

```
# The API:
DELETE /protocols/fpolicy/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/fpolicy/b34f5e3d-01d0-
11e9-8f63-0050568ea311" -H "accept: application/json"
```

Retrieve an FPolicy configuration

GET `/protocols/fpolicy`

Introduced In: 9.6

Retrieves an FPolicy configuration.

Related ONTAP commands

- `fpolicy show`
- `fpolicy policy show`
- `fpolicy policy scope show`
- `fpolicy policy event show`
- `fpolicy policy external-engine show`
- `fpolicy persistent-store show`

Learn more

- DOC /protocols/fpolicy

Parameters

Name	Type	In	Required	Description
engines.request_cancel_timeout	string	query	False	Filter by engines.request_cancel_timeout • Introduced in: 9.11
engines.resiliency.directory_path	string	query	False	Filter by engines.resiliency.directory_path • Introduced in: 9.11
engines.resiliency.enabled	boolean	query	False	Filter by engines.resiliency.enabled • Introduced in: 9.11
engines.resiliency.retention_duration	string	query	False	Filter by engines.resiliency.retention_duration • Introduced in: 9.11
engines.format	string	query	False	Filter by engines.format • Introduced in: 9.11
engines.request_abort_timeout	string	query	False	Filter by engines.request_abort_timeout • Introduced in: 9.11

Name	Type	In	Required	Description
engines.server_progress_timeout	string	query	False	Filter by engines.server_progress_timeout • Introduced in: 9.11
engines.buffer_size.send_buffer	integer	query	False	Filter by engines.buffer_size.send_buffer • Introduced in: 9.11 • Max value: 7895160 • Min value: 0
engines.buffer_size.recv_buffer	integer	query	False	Filter by engines.buffer_size.recv_buffer • Introduced in: 9.11 • Max value: 7895160 • Min value: 0
engines.status_request_interval	string	query	False	Filter by engines.status_request_interval • Introduced in: 9.11
engines.port	integer	query	False	Filter by engines.port
engines.ssl_option	string	query	False	Filter by engines.ssl_option • Introduced in: 9.11
engines.primary_servers	string	query	False	Filter by engines.primary_servers

Name	Type	In	Required	Description
engines.max_connection_retries	integer	query	False	Filter by engines.max_connection_retries • Introduced in: 9.17 • Max value: 20 • Min value: 0
engines.type	string	query	False	Filter by engines.type
engines.max_server_requests	integer	query	False	Filter by engines.max_server_requests • Introduced in: 9.11 • Max value: 10000 • Min value: 1
engines.session_timeout	string	query	False	Filter by engines.session_timeout • Introduced in: 9.17
engines.secondary_servers	string	query	False	Filter by engines.secondary_servers
engines.certificate.serial_number	string	query	False	Filter by engines.certificate.serial_number • Introduced in: 9.11
engines.certificate.ca	string	query	False	Filter by engines.certificate.ca • Introduced in: 9.11

Name	Type	In	Required	Description
engines.certificate.name	string	query	False	Filter by engines.certificate.name • Introduced in: 9.11
engines.name	string	query	False	Filter by engines.name
engines.keep_alive_interval	string	query	False	Filter by engines.keep_alive_interval • Introduced in: 9.13
persistent_stores.volume	string	query	False	Filter by persistent_stores.volume • Introduced in: 9.14
persistent_stores.autosize_mode	string	query	False	Filter by persistent_stores.autosize_mode • Introduced in: 9.15
persistent_stores.name	string	query	False	Filter by persistent_stores.name • Introduced in: 9.14
persistent_stores.size	integer	query	False	Filter by persistent_stores.size • Introduced in: 9.15
events.volume_monitoring	boolean	query	False	Filter by events.volume_monitoring

Name	Type	In	Required	Description
events.file_operations.create_dir	boolean	query	False	Filter by events.file_operations.create_dir
events.file_operations.close	boolean	query	False	Filter by events.file_operations.close
events.file_operations.getattr	boolean	query	False	Filter by events.file_operations.getattr
events.file_operations.rename_dir	boolean	query	False	Filter by events.file_operations.rename_dir
events.file_operations.read	boolean	query	False	Filter by events.file_operations.read
events.file_operations.create	boolean	query	False	Filter by events.file_operations.create
events.file_operations.delete	boolean	query	False	Filter by events.file_operations.delete
events.file_operations.write	boolean	query	False	Filter by events.file_operations.write
events.file_operations.lookup	boolean	query	False	Filter by events.file_operations.lookup
events.file_operations.rename	boolean	query	False	Filter by events.file_operations.rename
events.file_operations.setattr	boolean	query	False	Filter by events.file_operations.setattr
events.file_operations.symlink	boolean	query	False	Filter by events.file_operations.symlink

Name	Type	In	Required	Description
events.file_operations.access	boolean	query	False	Filter by events.file_operations.access • Introduced in: 9.13
events.file_operations.link	boolean	query	False	Filter by events.file_operations.link
events.file_operations.open	boolean	query	False	Filter by events.file_operations.open
events.file_operations.delete_dir	boolean	query	False	Filter by events.file_operations.delete_dir
events.monitor_fileop_failure	boolean	query	False	Filter by events.monitor_fileop_failure • Introduced in: 9.13
events.filters.offline_bit	boolean	query	False	Filter by events.filters.offline_bit
events.filters.setattr_with_modify_time_change	boolean	query	False	Filter by events.filters.setattr_with_modify_time_change
events.filters.close_with_modification	boolean	query	False	Filter by events.filters.close_with_modification
events.filters.setattr_with_group_change	boolean	query	False	Filter by events.filters.setattr_with_group_change
events.filters.setattr_with_allocation_size_change	boolean	query	False	Filter by events.filters.setattr_with_allocation_size_change

Name	Type	In	Required	Description
events.filters.setattr_with_creation_time_change	boolean	query	False	Filter by events.filters.setattr_with_creation_time_change
events.filters.setattr_with_dacl_change	boolean	query	False	Filter by events.filters.setattr_with_dacl_change
events.filters.setattr_with_size_change	boolean	query	False	Filter by events.filters.setattr_with_size_change
events.filters.close_with_read	boolean	query	False	Filter by events.filters.close_with_read
events.filters.close_without_modification	boolean	query	False	Filter by events.filters.close_without_modification
events.filters.monitor_ads	boolean	query	False	Filter by events.filters.monitor_ads
events.filters.first_read	boolean	query	False	Filter by events.filters.first_read
events.filters.setattr_with_owner_change	boolean	query	False	Filter by events.filters.setattr_with_owner_change
events.filters.open_with_delete_intent	boolean	query	False	Filter by events.filters.open_with_delete_intent
events.filters.exclude_directory	boolean	query	False	Filter by events.filters.exclude_directory
events.filters.first_write	boolean	query	False	Filter by events.filters.first_write

Name	Type	In	Required	Description
events.filters.setattr_with_access_time_change	boolean	query	False	Filter by events.filters.setattr_with_access_time_change
events.filters.setattr_with_sacl_change	boolean	query	False	Filter by events.filters.setattr_with_sacl_change
events.filters.setattr_with_mode_change	boolean	query	False	Filter by events.filters.setattr_with_mode_change
events.filters.write_with_size_change	boolean	query	False	Filter by events.filters.write_with_size_change
events.filters.open_with_write_intent	boolean	query	False	Filter by events.filters.open_with_write_intent
events.name	string	query	False	Filter by events.name
events.protocol	string	query	False	Filter by events.protocol
policies.enabled	boolean	query	False	Filter by policies.enabled
policies.allow_privileged_access	boolean	query	False	Filter by policies.allow_privileged_access • Introduced in: 9.13
policies.engine.name	string	query	False	Filter by policies.engine.name
policies.passthrough_read	boolean	query	False	Filter by policies.passthrough_read • Introduced in: 9.11

Name	Type	In	Required	Description
policies.priority	integer	query	False	Filter by policies.priority • Max value: 10 • Min value: 1
policies.mandatory	boolean	query	False	Filter by policies.mandatory
policies.privileged_user	string	query	False	Filter by policies.privileged_user • Introduced in: 9.11
policies.scope.exclude_extension	string	query	False	Filter by policies.scope.exclude_extension
policies.scope.exclude_volumes	string	query	False	Filter by policies.scope.exclude_volumes
policies.scope.include_volumes	string	query	False	Filter by policies.scope.include_volumes
policies.scope.exclude_shares	string	query	False	Filter by policies.scope.exclude_shares
policies.scope.include_shares	string	query	False	Filter by policies.scope.include_shares
policies.scope.object_monitoring_with_no_extension	boolean	query	False	Filter by policies.scope.object_monitoring_with_no_extension • Introduced in: 9.11

Name	Type	In	Required	Description
policies.scope.check_extensions_on_directories	boolean	query	False	Filter by policies.scope.check_extensions_on_directories • Introduced in: 9.11
policies.scope.include_extension	string	query	False	Filter by policies.scope.include_extension
policies.scope.include_export_policies	string	query	False	Filter by policies.scope.include_export_policies
policies.scope.exclude_export_policies	string	query	False	Filter by policies.scope.exclude_export_policies
policies.name	string	query	False	Filter by policies.name
policies.persistent_store	string	query	False	Filter by policies.persistent_store • Introduced in: 9.14
policies.events.name	string	query	False	Filter by policies.events.name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[fpolicy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "engines": [
        {
          "certificate": {
            "ca": "TASample1",
            "name": "Sample1-FPolicy-Client",
            "serial_number": "8DDE112A114D1FBC"
          },
          "format": "string",
          "keep_alive_interval": "PT2M",
          "max_connection_retries": 5,
          "max_server_requests": 500,
          "name": "fp_ex_eng",
          "port": 9876,
          "primary_servers": [
            "10.132.145.20",
            "10.140.101.109"
          ],
          "request_abort_timeout": "PT40S",
          "request_cancel_timeout": "PT20S",
          "resiliency": {
            "directory_path": "/dir1",
            "retention_duration": "PT3M"
          },
          "secondary_servers": [
            "10.132.145.20",
            "10.132.145.21"
          ],
```

```
        "server_progress_timeout": "PT1M",
        "session_timeout": "PT10S",
        "ssl_option": "string",
        "status_request_interval": "PT10S",
        "type": "string"
      }
    ],
    "events": [
      {
        "name": "event_cifs",
        "protocol": "string"
      }
    ],
    "persistent_stores": [
      {
        "autosize_mode": "string",
        "name": "ps1",
        "size": "100M",
        "volume": "psvol"
      }
    ],
    "policies": [
      {
        "engine": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string"
        },
        "events": [
          "event_cifs",
          "event_open"
        ],
        "name": "fp_policy_1",
        "persistent_store": "ps1",
        "priority": 1,
        "privileged_user": "mydomain\\testuser",
        "scope": {
          "exclude_export_policies": [
            "string"
          ],
          "exclude_extension": [
            "string"
          ],
```

```
            "exclude_shares": [
              "string"
            ],
            "exclude_volumes": [
              "vol1",
              "vol_svm1",
              "*"
            ],
            "include_export_policies": [
              "string"
            ],
            "include_extension": [
              "string"
            ],
            "include_shares": [
              "sh1",
              "share_cifs"
            ],
            "include_volumes": [
              "vol1",
              "vol_svm1"
            ]
          }
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

Name	Type	Description
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

fpolicy_engines

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.

Name	Type	Description
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	

Name	Type	Description
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.10 ◦ x-nullable: true

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations

Name	Type	Description
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.

Name	Type	Description
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

fpolicy_events

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

fpolicy_persistent_stores

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
_links	_links	
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
_links	_links	
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

fpolicy_policies

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.

Name	Type	Description
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fpolicy

FPolicy is an infrastructure component of ONTAP that enables partner applications connected to your storage systems to monitor and set file access permissions. Every time a client accesses a file from a storage system, based on the configuration of FPolicy, the partner application is notified about file access.

Name	Type	Description
_links	_links	
engines	array[fpolicy_engines]	
events	array[fpolicy_events]	
persistent_stores	array[fpolicy_persistent_stores]	
policies	array[fpolicy_policies]	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an FPolicy configuration

POST `/protocols/fpolicy`

Introduced In: 9.6

Creates an FPolicy configuration.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the FPolicy configuration.

Recommended optional properties

- `engines` - External server to which the notifications will be sent.
- `events` - File operations to monitor.
- `policies` - Policy configuration which acts as a container for FPolicy event and FPolicy engine.
- `scope` - Scope of the policy. Can be limited to exports, volumes, shares or file extensions.

Default property values

If not specified in POST, the following default property values are assigned:

- `engines.type` - *synchronous*
- `policies.engine` - *native*
- `policies.mandatory` - *true*
- `events.volume_monitoring` - *false*
- `events.file_operations.*` - *false*
- `events.filters.*` - *false*
- `events.monitor_fileop_failure.*` - *false*

Related ONTAP commands

- `fpolicy policy event create`
- `fpolicy policy external-engine create`
- `fpolicy policy create`
- `fpolicy policy scope create`
- `fpolicy enable`
- `fpolicy persistent-store create`

Learn more

- DOC /protocols/fpolicy

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
engines	array[fpolicy_engines]	
events	array[fpolicy_events]	
persistent_stores	array[fpolicy_persistent_stores]	
policies	array[fpolicy_policies]	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example request


```
{
  "engines": [
    {
      "certificate": {
        "ca": "TASample1",
        "name": "Sample1-FPolicy-Client",
        "serial_number": "8DDE112A114D1FBC"
      },
      "format": "string",
      "keep_alive_interval": "PT2M",
      "max_connection_retries": 5,
      "max_server_requests": 500,
      "name": "fp_ex_eng",
      "port": 9876,
      "primary_servers": [
        "10.132.145.20",
        "10.140.101.109"
      ],
      "request_abort_timeout": "PT40S",
      "request_cancel_timeout": "PT20S",
      "resiliency": {
        "directory_path": "/dir1",
        "retention_duration": "PT3M"
      },
      "secondary_servers": [
        "10.132.145.20",
        "10.132.145.21"
      ],
      "server_progress_timeout": "PT1M",
      "session_timeout": "PT10S",
      "ssl_option": "string",
      "status_request_interval": "PT10S",
      "type": "string"
    }
  ],
  "events": [
    {
      "name": "event_cifs",
      "protocol": "string"
    }
  ],
  "persistent_stores": [
    {
      "autosize_mode": "string",
```

```
      "name": "ps1",
      "size": "100M",
      "volume": "psvol"
    }
  ],
  "policies": [
    {
      "allow_privileged_access": true,
      "enabled": true,
      "engine": {
        "name": "string"
      },
      "events": [
        "event_cifs",
        "event_open"
      ],
      "name": "fp_policy_1",
      "persistent_store": "ps1",
      "priority": 1,
      "privileged_user": "mydomain\\testuser",
      "scope": {
        "exclude_export_policies": [
          "string"
        ],
        "exclude_extension": [
          "string"
        ],
        "exclude_shares": [
          "string"
        ],
        "exclude_volumes": [
          "vol1",
          "vol_svm1",
          "*"
        ],
        "include_export_policies": [
          "string"
        ],
        "include_extension": [
          "string"
        ],
        "include_shares": [
          "sh1",
          "share_cifs"
        ],
        "include_volumes": [
```

```
            "vol1",
            "vol_svm1"
          ]
        }
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[fpolicy]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "engines": [
        {
          "certificate": {
            "ca": "TASample1",
            "name": "Sample1-FPolicy-Client",
            "serial_number": "8DDE112A114D1FBC"
          },
          "format": "string",
          "keep_alive_interval": "PT2M",
          "max_connection_retries": 5,
          "max_server_requests": 500,
          "name": "fp_ex_eng",
          "port": 9876,
          "primary_servers": [
            "10.132.145.20",
            "10.140.101.109"
          ],
          "request_abort_timeout": "PT40S",
          "request_cancel_timeout": "PT20S",
          "resiliency": {
            "directory_path": "/dir1",
            "retention_duration": "PT3M"
          },
          "secondary_servers": [
            "10.132.145.20",
            "10.132.145.21"
          ],
          "server_progress_timeout": "PT1M",
          "session_timeout": "PT10S",
          "ssl_option": "string",
          "status_request_interval": "PT10S",
          "type": "string"
        }
      ],
      "events": [
        {
          "name": "event_cifs",
          "protocol": "string"
        }
      ],
```

```
      "persistent_stores": [
        {
          "autosize_mode": "string",
          "name": "ps1",
          "size": "100M",
          "volume": "psvol"
        }
      ],
      "policies": [
        {
          "allow_privileged_access": true,
          "enabled": true,
          "engine": {
            "name": "string"
          },
          "events": [
            "event_cifs",
            "event_open"
          ],
          "name": "fp_policy_1",
          "persistent_store": "ps1",
          "priority": 1,
          "privileged_user": "mydomain\\testuser",
          "scope": {
            "exclude_export_policies": [
              "string"
            ],
            "exclude_extension": [
              "string"
            ],
            "exclude_shares": [
              "string"
            ],
            "exclude_volumes": [
              "vol1",
              "vol_svm1",
              "*"
            ],
            "include_export_policies": [
              "string"
            ],
            "include_extension": [
              "string"
            ],
            "include_shares": [
              "sh1",
```

```
                "share_cifs"
              ],
              "include_volumes": [
                "vol1",
                "vol_svm1"
              ]
            }
          }
        ],
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9765032	The FPolicy engine, FPolicy event or FPolicy policy specified already exists
9765031	If any of the FPolicy engine, FPolicy event, or FPolicy policy creation fails due to a systematic error or hardware failure, the cause of the failure is detailed in the error message
2621706	The SVM UUID specified belongs to different SVM
2621462	The SVM name specified does not exist

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.

Name	Type	Description
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

fpolicy_engines

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.

Name	Type	Description
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.

Name	Type	Description
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.10 ◦ x-nullable: true

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations

Name	Type	Description
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.

Name	Type	Description
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

fpolicy_events

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

fpolicy_persistent_stores

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

fpolicy_policies

Name	Type	Description
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	

Name	Type	Description
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fpolicy

FPolicy is an infrastructure component of ONTAP that enables partner applications connected to your storage systems to monitor and set file access permissions. Every time a client accesses a file from a storage system, based on the configuration of FPolicy, the partner application is notified about file access.

Name	Type	Description
engines	array[fpolicy_engines]	
events	array[fpolicy_events]	
persistent_stores	array[fpolicy_persistent_stores]	
policies	array[fpolicy_policies]	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the FPolicy configuration for an SVM

DELETE `/protocols/fpolicy/{svm.uuid}`

Introduced In: 9.6

Deletes the FPolicy configuration for the specified SVM. Before deleting the FPolicy configuration, ensure that all policies belonging to the SVM are disabled.

Important notes:
The volume associated with the FPolicy Persistent Store is not automatically deleted from the FPolicy general endpoint. The associated volume can be removed manually.

Related ONTAP commands

- `fpolicy delete`
- `fpolicy policy scope delete`
- `fpolicy policy delete`
- `fpolicy policy event delete`
- `fpolicy policy external-engine delete`
- `fpolicy persistent-store delete`

Learn more

- DOC /protocols/fpolicy

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9765031	If any of the FPolicy engine, FPolicy event or FPolicy policy deletion fails due to a systemic error or hardware failure, the cause of the failure is detailed in the error message.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the FPolicy configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}`

Introduced In: 9.6

Retrieves an FPolicy configuration of an SVM.

Related ONTAP commands

- `fpolicy show`
- `fpolicy policy show`
- `fpolicy policy scope show`
- `fpolicy policy event show`
- `fpolicy policy external-engine show`
- `fpolicy persistent-store show`

Learn more

- DOC /protocols/fpolicy

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
engines	array[fpolicy_engines]	
events	array[fpolicy_events]	
persistent_stores	array[fpolicy_persistent_stores]	
policies	array[fpolicy_policies]	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "engines": [
    {
      "certificate": {
        "ca": "TASample1",
        "name": "Sample1-FPolicy-Client",
        "serial_number": "8DDE112A114D1FBC"
      },
      "format": "string",
      "keep_alive_interval": "PT2M",
      "max_connection_retries": 5,
      "max_server_requests": 500,
      "name": "fp_ex_eng",
      "port": 9876,
      "primary_servers": [
        "10.132.145.20",
        "10.140.101.109"
      ],
      "request_abort_timeout": "PT40S",
      "request_cancel_timeout": "PT20S",
      "resiliency": {
        "directory_path": "/dir1",
        "retention_duration": "PT3M"
      },
      "secondary_servers": [
        "10.132.145.20",
        "10.132.145.21"
      ],
      "server_progress_timeout": "PT1M",
      "session_timeout": "PT10S",
      "ssl_option": "string",
      "status_request_interval": "PT10S",
      "type": "string"
    }
  ],
  "events": [
    {
      "name": "event_cifs",
      "protocol": "string"
```

```
    }
  ],
  "persistent_stores": [
    {
      "autosize_mode": "string",
      "name": "ps1",
      "size": "100M",
      "volume": "psvol"
    }
  ],
  "policies": [
    {
      "engine": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string"
      },
      "events": [
        "event_cifs",
        "event_open"
      ],
      "name": "fp_policy_1",
      "persistent_store": "ps1",
      "priority": 1,
      "privileged_user": "mydomain\\testuser",
      "scope": {
        "exclude_export_policies": [
          "string"
        ],
        "exclude_extension": [
          "string"
        ],
        "exclude_shares": [
          "string"
        ],
        "exclude_volumes": [
          "vol1",
          "vol_svm1",
          "*"
        ],
        "include_export_policies": [
          "string"
        ],
```

```
        "include_extension": [
          "string"
        ],
        "include_shares": [
          "sh1",
          "share_cifs"
        ],
        "include_volumes": [
          "vol1",
          "vol_svm1"
        ]
      }
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.

Name	Type	Description
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

fpolicy_engines

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.

Name	Type	Description
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.

Name	Type	Description
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.10 ◦ x-nullable: true

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations

Name	Type	Description
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.

Name	Type	Description
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

fpolicy_events

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

fpolicy_persistent_stores

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
_links	_links	
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
_links	_links	
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

fpolicy_policies

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.

Name	Type	Description
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update FPolicy server configuration

Protocols fpolicy svm.uuid connections endpoint overview

Overview

This API is used to display and update connection status information for external FPolicy servers.
You must keep the following in mind while using these endpoints:

- If the passthrough_read field is set to true in a GET collection call, only FPolicy passthrough-read connections are returned.
- If the passthrough_read field is not provided or set to false in a GET collection call, only FPolicy server connections are returned.

Examples

Retrieving the FPolicy server connections for all SVMs in the cluster

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/connections

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/fpolicy/*/connections?passthrough_read=false&fields=*&re
turn_records=true" -H  "accept: application/json"

# The Response:
{
"records": [
  {
    "node": {
      "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
      "name": "user-vsim4"
    },
    "svm": {
      "uuid": "9f738ac5-c502-11eb-b82c-0050568e5902",
```

```
      "name": "vs1"
    },
    "policy": {
      "name": "p1"
    },
    "server": "192.168.137.78",
    "state": "disconnected",
    "update_time": "2021-06-17T16:05:15+05:30",
    "disconnected_reason": {
      "message": "No local lif present to connect to FPolicy server.",
      "code": 9305
    },
    "type": "primary"
  },
  {
    "node": {
      "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
      "name": "user-vsim4"
    },
    "svm": {
      "uuid": "9f738ac5-c502-11eb-b82c-0050568e5902",
      "name": "vs1"
    },
    "policy": {
      "name": "p2"
    },
    "server": "192.168.136.38",
    "state": "disconnected",
    "update_time": "2021-06-17T16:05:15+05:30",
    "disconnected_reason": {
      "message": "No local lif present to connect to FPolicy server.",
      "code": 9305
    },
    "type": "primary"
  },
  {
    "node": {
      "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
      "name": "user-vsim4"
    },
    "svm": {
      "uuid": "b6df362b-c502-11eb-b82c-0050568e5902",
      "name": "vs2"
    },
    "policy": {
      "name": "pol1"
```

```
    },
    "server": "192.168.129.146",
    "state": "disconnected",
    "update_time": "2021-06-17T16:05:15+05:30",
    "disconnected_reason": {
      "message": "No local lif present to connect to FPolicy server.",
      "code": 9305
    },
    "type": "primary"
  }
],
"num_records": 3
}
```

Retrieving all FPolicy passthrough read connections for all SVMs in the cluster

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/connections

# The Call:
curl-X GET "https://<mgmt-
ip>/api/protocols/fpolicy/*/connections?passthrough_read=true&fields=*&ret
urn_records=true&return_timeout=15"

# The Response:
{
"records": [
  {
    "node": {
      "uuid": "55693090-c7c8-11eb-a07a-0050568ebc01",
      "name": "user-vsim3",
    },
    "svm": {
      "uuid": "a69e938d-c7ca-11eb-a07a-0050568ebc01",
      "name": "vs2",
    },
    "policy": {
      "name": "pol1",
    },
    "server": "192.168.129.146",
    "session_uuid": "2410d348-c7cb-11eb-a07a-0050568ebc01",
    "state": "connected",
```

```
  },
  {
    "node": {
      "uuid": "55693090-c7c8-11eb-a07a-0050568ebc01",
      "name": "user-vsim3",
    },
    "svm": {
      "uuid": "a69e938d-c7ca-11eb-a07a-0050568ebc01",
      "name": "vs2",
    },
    "policy": {
      "name": "pol2",
    },
    "server": "192.168.129.146",
    "session_uuid": "288f7002-c7cb-11eb-a07a-0050568ebc01",
    "state": "connected",
  }
],
"num_records": 2,
}
```

Retrieving the FPolicy server connections for a specific SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/connections

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/9f738ac5-c502-11eb-
b82c-
0050568e5902/connections?passthrough_read=false&fields=*&return_records=tr
ue" -H  "accept: application/json"

# The Response:
{
"records": [
  {
    "node": {
      "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
      "name": "user-vsim4"
    },
    "svm": {
      "uuid": "9f738ac5-c502-11eb-b82c-0050568e5902",
```

```
      "name": "vs1"
    },
    "policy": {
      "name": "p1"
    },
    "server": "192.168.137.78",
    "state": "disconnected",
    "update_time": "2021-06-17T16:05:15+05:30",
    "disconnected_reason": {
      "message": "No local lif present to connect to FPolicy server.",
      "code": 9305
    },
    "type": "primary"
  },
  {
    "node": {
      "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
      "name": "user-vsim4"
    },
    "svm": {
      "uuid": "9f738ac5-c502-11eb-b82c-0050568e5902",
      "name": "vs1"
    },
    "policy": {
      "name": "p2"
    },
    "server": "192.168.136.38",
    "state": "disconnected",
    "update_time": "2021-06-17T16:05:15+05:30",
    "disconnected_reason": {
      "message": "No local lif present to connect to FPolicy server.",
      "code": 9305
    },
    "type": "primary"
  },
],
"num_records": 2
}
```


Retrieving a specific FPolicy server connection

```
# The API:
GET
/protocols/fpolicy/{svm.uuid}/connections/{node.uuid}/{policy.name}/{serve
r}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/9f738ac5-c502-11eb-
b82c-0050568e5902/connections/8ca36b68-c501-11eb-b82c-
0050568e5902/p1/192.168.137.78" -H  "accept: application/json"

# The Response:
{
"node": {
  "uuid": "8ca36b68-c501-11eb-b82c-0050568e5902",
  "name": "user-vsim4"
},
"svm": {
  "uuid": "9f738ac5-c502-11eb-b82c-0050568e5902",
  "name": "vs1"
},
"policy": {
  "name": "p1"
},
"server": "192.168.137.78",
"state": "disconnected",
"update_time": "2021-06-17T16:05:15+05:30",
"disconnected_reason": {
  "message": "No local lif present to connect to FPolicy server.",
  "code": 9305
},
"type": "primary"
}
```

Updating the FPolicy server connection

```
# The API:
PATCH
/protocols/fpolicy/{svm.uuid}/connections/{node.uuid}/{policy.name}/{serve
r}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/9f738ac5-c502-11eb-
b82c-0050568e5902/connections/8ca36b68-c501-11eb-b82c-
0050568e5902/p1/192.168.137.78" -H  "accept: application/json"
```

Retrieve the status of FPolicy servers

GET `/protocols/fpolicy/{svm.uuid}/connections`

Introduced In: 9.10

Retrieves the statuses of FPolicy servers.

Related ONTAP commands

- `vserver fpolicy show-engine`
- `vserver fpolicy show-passthrough-read-connection`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/connections

Parameters

Name	Type	In	Required	Description
passthrough_read	boolean	query	False	Whether to view only passthrough-read connections
update_time	string	query	False	Filter by update_time
state	string	query	False	Filter by state
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
server	string	query	False	Filter by server

Name	Type	In	Required	Description
policy.name	string	query	False	Filter by policy.name
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
session_uuid	string	query	False	Filter by session_uuid
disconnected_reason.message	string	query	False	Filter by disconnected_reason.message
disconnected_reason.code	integer	query	False	Filter by disconnected_reason.code
max_records	integer	query	False	Limit the number of records returned.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[fpolicy_connection]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "disconnected_reason": {
        "code": 9307,
        "message": "TCP Connection to FPolicy server failed."
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string"
      },
      "server": "10.132.145.20",
      "session_uuid": "5224ec64-b336-11eb-841c-0050568e14c2",
      "state": "connected",
      "svm": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "primary",
      "update_time": "2019-06-12 11:00:16 -0400"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

disconnected_reason

Indicates the reason for FPolicy server disconnection.

Name	Type	Description
code	integer	Reason ID for the FPolicy Server disconnection.
message	string	FPolicy server reason for disconnection message.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

self_link

Name	Type	Description
self	href	

fpolicy_policy_reference

Name	Type	Description
_links	self_link	
name	string	The name of the FPolicy Policy name.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fpolicy_connection

Displays the connection status information of the FPolicy server.

Name	Type	Description
_links	_links	
disconnected_reason	disconnected_reason	Indicates the reason for FPolicy server disconnection.
node	node	
policy	fpolicy_policy_reference	
server	string	IP address of the FPolicy server.
session_uuid	string	Unique session ID associated with each connection to the FPolicy server and it can be used to identify the established connection.

Name	Type	Description
state	string	Specifies the FPolicy server connection state indicating if it is in the connected or disconnected state. The following is a list of the possible states: • connected - Connected • disconnected - Disconnected
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	FPolicy server type. The possible values are: • primary - Primary server • secondary - Secondary server
update_time	string	Specifies the time at which FPolicy server is connected or disconnected.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the status of an FPolicy server

GET `/protocols/fpolicy/{svm.uuid}/connections/{node.uuid}/{policy.name}/{server}`

Introduced In: 9.10

Retrieves the status of an FPolicy server.

Related ONTAP commands

- `vserver fpolicy show-engine`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/connections

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
node.uuid	string	path	True	Node UUID.
policy.name	string	path	True	Policy name
server	string	path	True	FPolicy Server IP address

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
disconnected_reason	disconnected_reason	Indicates the reason for FPolicy server disconnection.
node	node	
policy	fpolicy_policy_reference	
server	string	IP address of the FPolicy server.

Name	Type	Description
session_uuid	string	Unique session ID associated with each connection to the FPolicy server and it can be used to identify the established connection.
state	string	Specifies the FPolicy server connection state indicating if it is in the connected or disconnected state. The following is a list of the possible states: • connected - Connected • disconnected - Disconnected
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	FPolicy server type. The possible values are: • primary - Primary server • secondary - Secondary server
update_time	string	Specifies the time at which FPolicy server is connected or disconnected.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "disconnected_reason": {
    "code": 9307,
    "message": "TCP Connection to FPolicy server failed."
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string"
  },
  "server": "10.132.145.20",
  "session_uuid": "5224ec64-b336-11eb-841c-0050568e14c2",
  "state": "connected",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "primary",
  "update_time": "2019-06-12 11:00:16 -0400"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

disconnected_reason

Indicates the reason for FPolicy server disconnection.

Name	Type	Description
code	integer	Reason ID for the FPolicy Server disconnection.
message	string	FPolicy server reason for disconnection message.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

self_link

Name	Type	Description
self	href	

fpolicy_policy_reference

Name	Type	Description
_links	self_link	
name	string	The name of the FPolicy Policy name.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the FPolicy server status

PATCH `/protocols/fpolicy/{svm.uuid}/connections/{node.uuid}/{policy.name}/{server}`

Introduced In: 9.10

Updates the status of an FPolicy server.

Related ONTAP commands

- `vserver fpolicy engine-connect`
- `vserver fpolicy engine-disconnect`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/connections

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
node.uuid	string	path	True	Node UUID.
policy.name	string	path	True	Policy name
server	string	path	True	FPolicy Server IP address

Request Body

Name	Type	Description
disconnected_reason	disconnected_reason	Indicates the reason for FPolicy server disconnection.
node	node	
server	string	IP address of the FPolicy server.
session_uuid	string	Unique session ID associated with each connection to the FPolicy server and it can be used to identify the established connection.
state	string	Specifies the FPolicy server connection state indicating if it is in the connected or disconnected state. The following is a list of the possible states: • connected - Connected • disconnected - Disconnected
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	FPolicy server type. The possible values are: • primary - Primary server • secondary - Secondary server
update_time	string	Specifies the time at which FPolicy server is connected or disconnected.

Example request

```
{
  "disconnected_reason": {
    "code": 9307,
    "message": "TCP Connection to FPolicy server failed."
  },
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "server": "10.132.145.20",
  "session_uuid": "5224ec64-b336-11eb-841c-0050568e14c2",
  "state": "connected",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "primary",
  "update_time": "2019-06-12 11:00:16 -0400"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764954	The specified policy does not exist
9764911	Failed to connect to the FPolicy server. Reason: The specified entry does not exist
9764912	Failed to disconnect the FPolicy server. Reason: The specified entry does not exist
9764948	The specified policy is disabled. Using a disabled policy with this API is not supported. Use the 'PATCH /protocols/fpolicy/{svm.uuid}/policies/{name}' API to enable the policy
9764963	The specified server is already connected
9764964	The specified server is already disconnected

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

disconnected_reason

Indicates the reason for FPolicy server disconnection.

Name	Type	Description
code	integer	Reason ID for the FPolicy Server disconnection.
message	string	FPolicy server reason for disconnection message.

node

Name	Type	Description
name	string	
uuid	string	

self_link

fpolicy_policy_reference

Name	Type	Description
name	string	The name of the FPolicy Policy name.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fpolicy_connection

Displays the connection status information of the FPolicy server.

Name	Type	Description
disconnected_reason	disconnected_reason	Indicates the reason for FPolicy server disconnection.
node	node	
server	string	IP address of the FPolicy server.
session_uuid	string	Unique session ID associated with each connection to the FPolicy server and it can be used to identify the established connection.
state	string	Specifies the FPolicy server connection state indicating if it is in the connected or disconnected state. The following is a list of the possible states: • connected - Connected • disconnected - Disconnected
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	FPolicy server type. The possible values are: • primary - Primary server • secondary - Secondary server
update_time	string	Specifies the time at which FPolicy server is connected or disconnected.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FPolicy engine configuration

Protocols fpolicy svm.uuid engines endpoint overview

Overview

The FPolicy engine allows you to configure the external servers to which the file access notifications are sent. As part of FPolicy engine configuration, you can configure a server(s) to which the notification is sent, an optional set of secondary server(s) to which the notification is sent in the case of a primary server(s) failure, the port number for FPolicy application, the type of the engine, which is either synchronous or asynchronous and the format of the notifications, which is either xml or protobuf.

For the synchronous engine, ONTAP will wait for a response from the FPolicy application before it allows the operation. With an asynchronous engine, ONTAP proceeds with the operation processing after sending the notification to the FPolicy application. An engine can belong to multiple FPolicy policies. If the format is not specified, the default format, xml, is configured.

Examples

Creating an FPolicy engine

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/engines

#The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"name\": \"engine0\", \"port\": 9876,
\"primary_servers\": [ \"10.132.145.22\", \"10.140.101.109\" ],
\"secondary_servers\": [ \"10.132.145.20\", \"10.132.145.21\" ], \"type\":
\"synchronous\", \"format\": \"xml\", \"request_abort_timeout\": \"PT3M\",
\"request_cancel_timeout\": \"PT29S\",  \"server_progress_timeout\":
\"PT1M\",  \"status_request_interval\": \"PT23S\",
\"keep_alive_interval\": \"PT2M\", \"session_timeout\": \"PT10S\",
\"max_connection_retries\": 5 }"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "engine0",
    "primary_servers": [
      "10.132.145.22",
      "10.140.101.109"
    ],
    "secondary_servers": [
      "10.132.145.20",
      "10.132.145.21"
    ],
    "port": 9876,
    "type": "synchronous",
    "format": "xml"
  }
]
}
```

Creating an FPolicy engine with the minimum required fields

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/engines

#The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"name\": \"engine0\", \"port\": 9876,
\"primary_servers\": [ \"10.132.145.22\", \"10.140.101.109\" ], \"type\":
\"synchronous\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "engine0",
    "primary_servers": [
      "10.132.145.22",
      "10.140.101.109"
    ],
    "port": 9876,
    "type": "synchronous",
    "format": "xml"
  }
]
}
```

Retrieving an FPolicy engine configuration for a particular SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/engines

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/?fields=*&return_records=true&return_timeout=15"
-H "accept: application/json"

# The response:
{
"records": [
  {
```

```
    "svm": {
      "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
    },
    "name": "cifs",
    "primary_servers": [
      "10.20.20.10"
    ],
    "port": 9876,
    "type": "synchronous"
  },
  {
    "svm": {
      "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
    },
    "name": "nfs",
    "primary_servers": [
      "10.23.140.64",
      "10.140.101.109"
    ],
    "secondary_servers": [
      "10.132.145.20",
      "10.132.145.22"
    ],
    "port": 9876,
    "type": "synchronous",
    "format": "xml",
    "ssl_option": "no_auth",
    "resiliency": {
      "enabled": false,
      "retention_duration": "PT3M"
    },
    "buffer_size": {
      "recv_buffer": 262144,
      "send_buffer": 1048576
    },
    "max_server_requests": 500,
    "request_cancel_timeout": "PT29S",
    "request_abort_timeout": "PT3M",
    "server_progress_timeout": "PT1M",
    "status_request_interval": "PT23S",
    "keep_alive_interval": "PT2M",
    "session_timeout": "PT10S",
    "max_connection_retries": 5
  }
],
"num_records": 2
```

```
}
```

Retrieving a specific FPolicy engine configuration for an SVM

```
# The Api:
GET /protocols/fpolicy/{svm.uuid}/engines/{name}

#The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/cifs?fields=*" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
 },
 "name": "cifs",
 "primary_servers": [
   "10.20.20.10"
 ],
 "port": 9876,
 "type": "synchronous",
 "format": "xml"
}
```

Updating an FPolicy engine for an SVM

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/engines/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/cifs" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"port\": 6666, \"secondary_servers\": [
\"10.132.145.20\", \"10.132.145.21\" ], \"type\": \"synchronous\"}"
```

Updating all the attributes of a specific FPolicy engine for an SVM

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/engines/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/engines/cifs" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"port\": 9876, \"primary_servers\": [
\"10.132.145.20\", \"10.140.101.109\" ], \"secondary_servers\": [
\"10.132.145.23\", \"10.132.145.21\" ], \"type\": \"synchronous\",
\"format\": \"protobuf\"}"
```

Deleting a specific FPolicy engine for an SVM

```
# The API:
DELETE /protocols/fpolicy/{svm.uuid}/engines/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-
11e8-ae49-0050568e2c1e/engines/cifs" -H "accept: application/json"
```

Retrieve the FPolicy engine configuration for all engines of an SVM

GET `/protocols/fpolicy/{svm.uuid}/engines`

Introduced In: 9.6

Retrieves FPolicy engine configurations of all the engines for a specified SVM. ONTAP allows creation of cluster-level FPolicy engines that act as a template for all the SVMs belonging to the cluster. These cluster-level FPolicy engines are also retrieved for the specified SVM.

Related ONTAP commands

- `fpolicy policy external-engine show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/engines

Parameters

Name	Type	In	Required	Description
resiliency.retention_duration	string	query	False	Filter by resiliency.retention_duration • Introduced in: 9.11
resiliency.enabled	boolean	query	False	Filter by resiliency.enabled • Introduced in: 9.11
resiliency.directory_path	string	query	False	Filter by resiliency.directory_path • Introduced in: 9.11
request_cancel_timeout	string	query	False	Filter by request_cancel_timeout • Introduced in: 9.11
format	string	query	False	Filter by format • Introduced in: 9.11
request_abort_timeout	string	query	False	Filter by request_abort_timeout • Introduced in: 9.11

Name	Type	In	Required	Description
buffer_size.recv_buffer	integer	query	False	Filter by buffer_size.recv_buffer • Introduced in: 9.11 • Max value: 7895160 • Min value: 0
buffer_size.send_buffer	integer	query	False	Filter by buffer_size.send_buffer • Introduced in: 9.11 • Max value: 7895160 • Min value: 0
server_progress_timeout	string	query	False	Filter by server_progress_timeout • Introduced in: 9.11
status_request_interval	string	query	False	Filter by status_request_interval • Introduced in: 9.11
ssl_option	string	query	False	Filter by ssl_option • Introduced in: 9.11
port	integer	query	False	Filter by port

Name	Type	In	Required	Description
max_server_requests	integer	query	False	Filter by max_server_requests • Introduced in: 9.11 • Max value: 10000 • Min value: 1
type	string	query	False	Filter by type
max_connection_retries	integer	query	False	Filter by max_connection_retries • Introduced in: 9.17 • Max value: 20 • Min value: 0
primary_servers	string	query	False	Filter by primary_servers
secondary_servers	string	query	False	Filter by secondary_servers
session_timeout	string	query	False	Filter by session_timeout • Introduced in: 9.17
certificate.name	string	query	False	Filter by certificate.name • Introduced in: 9.11
certificate.ca	string	query	False	Filter by certificate.ca • Introduced in: 9.11

Name	Type	In	Required	Description
certificate.serial_number	string	query	False	Filter by certificate.serial_number • Introduced in: 9.11
keep_alive_interval	string	query	False	Filter by keep_alive_interval • Introduced in: 9.13
name	string	query	False	Filter by name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[fpolicy_engine]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "certificate": {
        "ca": "TASample1",
        "name": "Sample1-FPolicy-Client",
        "serial_number": "8DDE112A114D1FBC"
      },
      "format": "string",
      "keep_alive_interval": "PT2M",
      "max_connection_retries": 5,
      "max_server_requests": 500,
      "name": "fp_ex_eng",
      "port": 9876,
      "primary_servers": [
        "10.132.145.20",
        "10.140.101.109"
      ],
      "request_abort_timeout": "PT40S",
      "request_cancel_timeout": "PT20S",
      "resiliency": {
        "directory_path": "/dir1",
        "retention_duration": "PT3M"
      },
      "secondary_servers": [
        "10.132.145.20",
        "10.132.145.21"
      ],
      "server_progress_timeout": "PT1M",
      "session_timeout": "PT10S",
      "ssl_option": "string",
      "status_request_interval": "PT10S",
      "svm": {
        "uuid": "string"
      },
```

```
        "type": "string"
      }
    ]
  }
```

Error

```
Status: Default,
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.

Name	Type	Description
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_engine

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.

Name	Type	Description
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	

Name	Type	Description
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the FPolicy engine configuration for an SVM

POST `/protocols/fpolicy/{svm.uuid}/engines`

Introduced In: 9.6

Creates an FPolicy engine configuration for a specified SVM. FPolicy engine creation is allowed only on data SVMs.

Required properties

- `svm.uuid` - Existing SVM in which to create the FPolicy engine.
- `name` - Name of external engine.
- `port` - Port number of the FPolicy server application.
- `primary_servers` - List of primary FPolicy servers to which the node will send notifications.

Recommended optional properties

- `secondary_servers` - It is recommended to configure secondary FPolicy server to which the node will send notifications when the primary server is down.

Default property values

- `type` - *synchronous*
- `format` - *xml*

Related ONTAP commands

- `fpolicy policy external-engine create`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/engines

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.

Name	Type	Description
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

Example request

```
{
  "certificate": {
    "ca": "TASample1",
    "name": "Sample1-FPolicy-Client",
    "serial_number": "8DDE112A114D1FBC"
  },
  "format": "string",
  "keep_alive_interval": "PT2M",
  "max_connection_retries": 5,
  "max_server_requests": 500,
  "name": "fp_ex_eng",
  "port": 9876,
  "primary_servers": [
    "10.132.145.20",
    "10.140.101.109"
  ],
  "request_abort_timeout": "PT40S",
  "request_cancel_timeout": "PT20S",
  "resiliency": {
    "directory_path": "/dir1",
    "retention_duration": "PT3M"
  },
  "secondary_servers": [
    "10.132.145.20",
    "10.132.145.21"
  ],
  "server_progress_timeout": "PT1M",
  "session_timeout": "PT10S",
  "ssl_option": "string",
  "status_request_interval": "PT10S",
  "svm": {
    "uuid": "string"
  },
  "type": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[fpolicy_engine]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "certificate": {
        "ca": "TASample1",
        "name": "Sample1-FPolicy-Client",
        "serial_number": "8DDE112A114D1FBC"
      },
      "format": "string",
      "keep_alive_interval": "PT2M",
      "max_connection_retries": 5,
      "max_server_requests": 500,
      "name": "fp_ex_eng",
      "port": 9876,
      "primary_servers": [
        "10.132.145.20",
        "10.140.101.109"
      ],
      "request_abort_timeout": "PT40S",
      "request_cancel_timeout": "PT20S",
      "resiliency": {
        "directory_path": "/dir1",
        "retention_duration": "PT3M"
      },
      "secondary_servers": [
        "10.132.145.20",
        "10.132.145.21"
      ],
      "server_progress_timeout": "PT1M",
      "session_timeout": "PT10S",
      "ssl_option": "string",
      "status_request_interval": "PT10S",
      "svm": {
        "uuid": "string"
      },
      "type": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764885	The primary secondary server has a redundant IP address
9764953	The name of the FPolicy engine is "native" which is reserved by the system
9765011	The resiliency feature is not supported with mandatory screening
9765012	The specified resiliency directory path does not exist
9765004	The specified session timeout exceeds the maximum limit
9764935	The specified max connection retries exceeds the maximum limit

Definitions

See Definitions

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_engine

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.

Name	Type	Description
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.

Name	Type	Description
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FPolicy external engine configuration

DELETE `/protocols/fpolicy/{svm.uuid}/engines/{name}`

Introduced In: 9.6

Deletes the FPolicy external engine configuration. Deletion of an FPolicy engine that is attached to one or more FPolicy policies is not allowed.

Related ONTAP commands

- `fpolicy policy external-engine delete`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/engines

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764940	At least one FPolicy policy is using the FPolicy engine
9764887	The FPolicy engine is a cluster level FPolicy engine

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a particular FPolicy engine configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}/engines/{name}`

Introduced In: 9.6

Retrieves a particular FPolicy engine configuration of a specified SVM. A cluster-level FPolicy engine configuration cannot be retrieved for a data SVM.

Related ONTAP commands

- `fpolicy policy external-engine show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/engines

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
name	string	Specifies the name to assign to the external server configuration.
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	

Name	Type	Description
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

Example response


```
{
  "certificate": {
    "ca": "TASample1",
    "name": "Sample1-FPolicy-Client",
    "serial_number": "8DDE112A114D1FBC"
  },
  "format": "string",
  "keep_alive_interval": "PT2M",
  "max_connection_retries": 5,
  "max_server_requests": 500,
  "name": "fp_ex_eng",
  "port": 9876,
  "primary_servers": [
    "10.132.145.20",
    "10.140.101.109"
  ],
  "request_abort_timeout": "PT40S",
  "request_cancel_timeout": "PT20S",
  "resiliency": {
    "directory_path": "/dir1",
    "retention_duration": "PT3M"
  },
  "secondary_servers": [
    "10.132.145.20",
    "10.132.145.21"
  ],
  "server_progress_timeout": "PT1M",
  "session_timeout": "PT10S",
  "ssl_option": "string",
  "status_request_interval": "PT10S",
  "svm": {
    "uuid": "string"
  },
  "type": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

svm

Name	Type	Description
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a specific FPolicy engine configuration for an SVM

PATCH `/protocols/fpolicy/{svm.uuid}/engines/{name}`

Introduced In: 9.6

Updates a specific FPolicy engine configuration of an SVM. Modification of an FPolicy engine that is attached to one or more enabled FPolicy policies is not allowed.

Related ONTAP commands

- `fpolicy policy external-engine modify`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/engines

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.

Name	Type	Description
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.

Name	Type	Description
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

Example request

```
{
  "certificate": {
    "ca": "TASample1",
    "name": "Sample1-FPolicy-Client",
    "serial_number": "8DDE112A114D1FBC"
  },
  "format": "string",
  "keep_alive_interval": "PT2M",
  "max_connection_retries": 5,
  "max_server_requests": 500,
  "port": 9876,
  "primary_servers": [
    "10.132.145.20",
    "10.140.101.109"
  ],
  "request_abort_timeout": "PT40S",
  "request_cancel_timeout": "PT20S",
  "resiliency": {
    "directory_path": "/dir1",
    "retention_duration": "PT3M"
  },
  "secondary_servers": [
    "10.132.145.20",
    "10.132.145.21"
  ],
  "server_progress_timeout": "PT1M",
  "session_timeout": "PT10S",
  "ssl_option": "string",
  "status_request_interval": "PT10S",
  "svm": {
    "uuid": "string"
  },
  "type": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764922	The primary and secondary server has a redundant IP address
9764942	At least one FPolicy policy is using the FPolicy engine
9764886	FPolicy engine is a cluster-level FPolicy engine
9765011	The resiliency feature is not supported with mandatory screening
9765012	The specified resiliency directory path does not exist
9765042	The specified send buffer size exceeds the maximum limit
9765043	The specified receive buffer size exceeds the maximum limit
9765063	Policy with Persistent Store feature does not support a "synchronous"
9765004	The specified session timeout exceeds the maximum limit
9764935	The specified max connection retries exceeds the maximum limit

Definitions

See Definitions

buffer_size

Specifies the send and receive buffer size of the connected socket for the FPolicy server.

Name	Type	Description
recv_buffer	integer	Specifies the receive buffer size of the connected socket for the FPolicy server. Default value is 256KB.
send_buffer	integer	Specifies the send buffer size of the connected socket for the FPolicy server. Default value 1MB.

certificate

Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
ca	string	Specifies the certificate authority (CA) name of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.
name	string	Specifies the certificate name as a fully qualified domain name (FQDN) or custom common name. The certificate is used if SSL authentication between the SVM and the FPolicy server is configured.
serial_number	string	Specifies the serial number of the certificate used for authentication if SSL authentication between the SVM and the FPolicy server is configured.

resiliency

If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.

Name	Type	Description
directory_path	string	Specifies the directory path under the SVM namespace, where notifications are stored in the files whenever a network outage happens.
enabled	boolean	Specifies whether the resiliency feature is enabled or not. Default is false.
retention_duration	string	Specifies the ISO-8601 duration, for which the notifications are written to files inside the storage controller during a network outage. The value for this field must be between 0 and 600 seconds. Default is 180 seconds.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_engine

Defines how ONTAP makes and manages connections to external FPolicy servers.

Name	Type	Description
buffer_size	buffer_size	Specifies the send and receive buffer size of the connected socket for the FPolicy server.
certificate	certificate	Provides details about certificate used to authenticate the FPolicy server.

Name	Type	Description
format	string	The format for the notification messages sent to the FPolicy servers. The possible values are: • xml - Notifications sent to the FPolicy server will be formatted using the XML schema. • protobuf - Notifications sent to the FPolicy server will be formatted using Protobuf schema, which is a binary form.
keep_alive_interval	string	Specifies the ISO-8601 interval time for a storage appliance to send Keep Alive message to an FPolicy server. The allowed range is between 10 to 600 seconds.
max_connection_retries	integer	This parameter specifies the maximum number of attempts to reconnect to the FPolicy server from an SVM. It is used to specify the number of times a broken connection will be retried. The value for this field must be between 0 and 20. By default, it is 5.
max_server_requests	integer	Specifies the maximum number of outstanding requests for the FPolicy server. It is used to specify maximum outstanding requests that will be queued up for the FPolicy server. The value for this field must be between 1 and 10000. The default values are 500, 1000 or 2000 for Low-end(<64 GB memory), Mid-end(>=64 GB memory) and High-end(>=128 GB memory) Platforms respectively.
port	integer	Port number of the FPolicy server application.
primary_servers	array[string]	

Name	Type	Description
request_abort_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be aborted by a storage appliance. The allowed range is between 0 to 200 seconds.
request_cancel_timeout	string	Specifies the ISO-8601 timeout duration for a screen request to be processed by an FPolicy server. The allowed range is between 0 to 100 seconds.
resiliency	resiliency	If all primary and secondary servers are down, or if no response is received from the FPolicy servers, file access events are stored inside the storage controller under the specified resiliency-directory-path.
secondary_servers	array[string]	
server_progress_timeout	string	Specifies the ISO-8601 timeout duration in which a throttled FPolicy server must complete at least one screen request. If no request is processed within the timeout, connection to the FPolicy server is terminated. The allowed range is between 0 to 100 seconds.
session_timeout	string	This parameter specifies the interval after which a new session ID is sent to the FPolicy server during reconnection attempts. The default value is set to 10 seconds. If the connection between the storage controller and the FPolicy server is terminated and reconnection is made within the -session-timeout interval, the old session ID is sent to the FPolicy server so that it can send responses for old notifications.

Name	Type	Description
ssl_option	string	Specifies the SSL option for external communication with the FPolicy server. Possible values include the following: • no_auth When set to "no_auth", no authentication takes place. • server_auth When set to "server_auth", only the FPolicy server is authenticated by the SVM. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate. • mutual_auth When set to "mutual_auth", mutual authentication takes place between the SVM and the FPolicy server. This means authentication of the FPolicy server by the SVM along with authentication of the SVM by the FPolicy server. With this option, before creating the FPolicy external engine, the administrator must install the public certificate of the certificate authority (CA) that signed the FPolicy server certificate along with the public certificate and key file for authentication of the SVM.
status_request_interval	string	Specifies the ISO-8601 interval time for a storage appliance to query a status request from an FPolicy server. The allowed range is between 0 to 50 seconds.
svm	svm	

Name	Type	Description
type	string	The notification mode determines what ONTAP does after sending notifications to FPolicy servers. The possible values are: • synchronous - After sending a notification, wait for a response from the FPolicy server. • asynchronous - After sending a notification, file request processing continues. ◦ Default value: 1 ◦ enum: ["synchronous", "asynchronous"] ◦ Introduced in: 9.6 ◦ x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FPolicy event configuration

Protocols fpolicy svm.uuid events endpoint overview

Overview

FPolicy events configurations allow you to specify which file access is monitored. As part of an FPolicy event, you can configure the SVM for which the events are generated, the name of the event configuration, the protocol (cifs, nfsv3/nfsv4) for which the events are generated, the file operations which are monitored, and filters that can be used to filter the unwanted notification generation for a specified protocol and file operation.

Each protocol has a set of supported file operations and filters. An SVM can have multiple events. A single FPolicy policy can have multiple FPolicy events.

FPolicy events can also be configured to monitor file operations which fail due to lack of permissions. You can specify which file operation to monitor for failure. However, filters can not be used to filter failed file operations.

Examples

Creating an FPolicy event for a CIFS protocol with all the supported file operations and filters

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/events

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/events?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"file_operations\": { \"close\": true, \"create\": true, \"create_dir\":
true, \"delete\": true, \"delete_dir\": true, \"getattr\": true, \"open\":
true, \"read\": true, \"rename\": true, \"rename_dir\": true, \"setattr\":
true, \"write\": true }, \"filters\": { \"close_with_modification\": true,
\"close_with_read\": true, \"close_without_modification\": true,
\"first_read\": true, \"first_write\": true, \"monitor_ads\": true,
\"offline_bit\": true, \"open_with_delete_intent\": true,
\"open_with_write_intent\": true, \"write_with_size_change\": true },
\"name\": \"event_cifs\", \"protocol\": \"cifs\", \"volume_monitoring\":
true}"

# The response:
{
"num_records": 1,
  "records": [
    {
      "name": "event_cifs",
      "protocol": "cifs",
      "volume_monitoring": true,
      "monitor_fileop_failure": false,
      "file_operations": {
        "close": true,
        "create": true,
```

```
        "create_dir": true,
        "delete": true,
        "delete_dir": true,
        "getattr": true,
        "open": true,
        "read": true,
        "write": true,
        "rename": true,
        "rename_dir": true,
        "setattr": true
      },
      "filters": {
        "monitor_ads": true,
        "close_with_modification": true,
        "close_without_modification": true,
        "close_with_read": true,
        "first_read": true,
        "first_write": true,
        "offline_bit": true,
        "open_with_delete_intent": true,
        "open_with_write_intent": true,
        "write_with_size_change": true
      }
    }
  ]
}
```


Creating an FPolicy event for an NFS protocol with all the supported file operations and filters

```
# The API:
post /protocols/fpolicy/{svm.uuid}/events

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/events?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"file_operations\": { \"create\": true, \"create_dir\": true, \"delete\":
true, \"delete_dir\": true, \"link\": true, \"lookup\": true, \"read\":
true, \"rename\": true, \"rename_dir\": true, \"setattr\": true,
\"symlink\": true, \"write\": true }, \"filters\": { \"offline_bit\":
true, \"write_with_size_change\": true }, \"name\": \"event_nfsv3\",
\"protocol\": \"nfsv3\", \"volume_monitoring\": false}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "event_nfsv3",
    "protocol": "nfsv3",
    "volume_monitoring": false,
    "monitor_fileop_failure": false,
    "file_operations": {
      "create": true,
      "create_dir": true,
      "delete": true,
      "delete_dir": true,
      "link": true,
      "lookup": true,
      "read": true,
      "write": true,
      "rename": true,
      "rename_dir": true,
      "setattr": true,
      "symlink": true
    },
    "filters": {
    "offline_bit": true,
    "write_with_size_change": true
    }
  }
]
}
```

Creating an FPolicy event to monitor failed file operations for an NFS protocol with all the supported file operations

```
# The API:
post /protocols/fpolicy/{svm.uuid}/events

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/b5087518-40b3-11ed-
b3eb-005056bbe901/events?return_records=false" -H "accept:
application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE=" -H
"Content-Type: application/json" -d "{  \"file_operations\": {
\"create\": true,    \"create_dir\": true,    \"delete\": true,
\"delete_dir\": true,    \"link\": true,    \"read\": true,    \"rename\":
true,    \"rename_dir\": true,    \"write\": true  },  \"name\":
\"nfs_failed_op\",  \"protocol\": \"nfsv3\",  \"monitor_fileop_failure\":
true,  \"volume_monitoring\": false}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "nfs_failed_op",
    "protocol": "nfsv3",
    "volume_monitoring": false,
    "monitor_fileop_failure": true,
    "file_operations": {
      "create": true,
      "create_dir": true,
      "delete": true,
      "delete_dir": true,
      "link": true,
      "read": true,
      "write": true,
      "rename": true,
      "rename_dir": true
    }
  }
]
}
```

Retrieving all of the FPolicy event configurations configured to monitor failed file operations for a specified SVM

```
# The API:
post /protocols/fpolicy/{svm.uuid}/events

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/b5087518-40b3-11ed-
b3eb-
005056bbe901/events?monitor_fileop_failure=true&fields=*&return_records=tr
ue&return_timeout=15" -H  "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
    "uuid": "b5087518-40b3-11ed-b3eb-005056bbe901"
    },
    "name": "fo_event",
    "protocol": "cifs",
    "volume_monitoring": false,
    "monitor_fileop_failure": true,
    "file_operations": {
      "close": false,
      "create": false,
      "create_dir": false,
      "delete": false,
      "delete_dir": false,
      "getattr": false,
      "link": false,
      "lookup": false,
      "open": true,
      "read": false,
      "write": false,
      "rename": false,
      "rename_dir": false,
      "setattr": false,
      "symlink": false
    }
  }
],
"num_records": 1
}
```

Retrieving all of the FPolicy event configurations for a specified SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/events

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/events/?fields=*&return_records=true&return_timeout=15"
-H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
    },
    "name": "cluster",
    "protocol": "cifs",
    "volume_monitoring": false,
    "monitor_fileop_failure": false,
    "file_operations": {
      "close": true,
      "create": false,
      "create_dir": false,
      "delete": false,
      "delete_dir": false,
      "getattr": false,
      "link": false,
      "lookup": false,
      "open": false,
      "read": false,
      "write": false,
      "rename": false,
      "rename_dir": false,
      "setattr": false,
      "symlink": false
    },
    "filters": {
      "monitor_ads": false,
      "close_with_modification": false,
      "close_without_modification": false,
      "close_with_read": true,
      "first_read": false,
```

```
      "first_write": false,
      "offline_bit": false,
      "open_with_delete_intent": false,
      "open_with_write_intent": false,
      "write_with_size_change": false,
      "setattr_with_owner_change": false,
      "setattr_with_group_change": false,
      "setattr_with_sacl_change": false,
      "setattr_with_dacl_change": false,
      "setattr_with_modify_time_change": false,
      "setattr_with_access_time_change": false,
      "setattr_with_creation_time_change": false,
      "setattr_with_mode_change": false,
      "setattr_with_size_change": false,
      "setattr_with_allocation_size_change": false,
      "exclude_directory": false
    }
  },
  {
    "svm": {
      "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
    },
    "name": "event_cifs",
    "protocol": "cifs",
    "volume_monitoring": true,
    "monitor_fileop_failure": false,
    "file_operations": {
      "close": true,
      "create": true,
      "create_dir": true,
      "delete": true,
      "delete_dir": true,
      "getattr": true,
      "link": false,
      "lookup": false,
      "open": true,
      "read": true,
      "write": true,
      "rename": true,
      "rename_dir": true,
      "setattr": true,
      "symlink": false
    },
    "filters": {
      "monitor_ads": true,
      "close_with_modification": true,
```

```
      "close_without_modification": true,
      "close_with_read": true,
      "first_read": true,
      "first_write": true,
      "offline_bit": true,
      "open_with_delete_intent": true,
      "open_with_write_intent": true,
      "write_with_size_change": true,
      "setattr_with_owner_change": false,
      "setattr_with_group_change": false,
      "setattr_with_sacl_change": false,
      "setattr_with_dacl_change": false,
      "setattr_with_modify_time_change": false,
      "setattr_with_access_time_change": false,
      "setattr_with_creation_time_change": false,
      "setattr_with_mode_change": false,
      "setattr_with_size_change": false,
      "setattr_with_allocation_size_change": false,
      "exclude_directory": false
    }
  }
],
"num_records": 2
}
```


Retrieving a specific FPolicy event configuration for an SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/events/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-
0050568e2c1e/events/event_cifs?fields=*&return_records=true&return_timeout
=15" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
},
"name": "event_cifs",
```

```
"protocol": "cifs",
"volume_monitoring": true,
"monitor_fileop_failure": false,
"file_operations": {
  "close": true,
  "create": true,
  "create_dir": true,
  "delete": true,
  "delete_dir": true,
  "getattr": true,
  "link": false,
  "lookup": false,
  "open": true,
  "read": true,
  "write": true,
  "rename": true,
  "rename_dir": true,
  "setattr": true,
  "symlink": false
},
"filters": {
  "monitor_ads": true,
  "close_with_modification": true,
  "close_without_modification": true,
  "close_with_read": true,
  "first_read": true,
  "first_write": true,
  "offline_bit": true,
  "open_with_delete_intent": true,
  "open_with_write_intent": true,
  "write_with_size_change": true,
  "setattr_with_owner_change": false,
  "setattr_with_group_change": false,
  "setattr_with_sacl_change": false,
  "setattr_with_dacl_change": false,
  "setattr_with_modify_time_change": false,
  "setattr_with_access_time_change": false,
  "setattr_with_creation_time_change": false,
  "setattr_with_mode_change": false,
  "setattr_with_size_change": false,
  "setattr_with_allocation_size_change": false,
  "exclude_directory": false
}
}
```

Updating a specific FPolicy event configuration for a specified SVM

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/events/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/events/event_cifs" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"file_operations\": { \"close\":
false, \"create\": false, \"read\": true }, \"filters\": {
\"close_with_modification\": false, \"close_with_read\": false,
\"close_without_modification\": false }, \"protocol\": \"cifs\",
\"volume_monitoring\": false}"
```

Deleting a specific FPolicy event configuration for a specific SVM

```
# The API:
DELETE /protocols/fpolicy/{svm.uuid}/events/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-
11e8-ae49-0050568e2c1e/events/event_cifs" -H "accept: application/json"
```

Retrieve the FPolicy event configuration for all events for an SVM

GET `/protocols/fpolicy/{svm.uuid}/events`

Introduced In: 9.6

Retrieves FPolicy event configurations for all events for a specified SVM. ONTAP allows the creation of cluster-level FPolicy events that act as a template for all the data SVMs belonging to the cluster. These cluster-level FPolicy events are also retrieved for the specified SVM.

Related ONTAP commands

- `fpolicy policy event show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/events

Parameters

Name	Type	In	Required	Description
protocol	string	query	False	Filter by protocol
name	string	query	False	Filter by name
filters.setattr_with_mode_change	boolean	query	False	Filter by filters.setattr_with_mode_change
filters.setattr_with_sacl_change	boolean	query	False	Filter by filters.setattr_with_sacl_change
filters.setattr_with_access_time_change	boolean	query	False	Filter by filters.setattr_with_access_time_change
filters.open_with_write_intent	boolean	query	False	Filter by filters.open_with_write_intent
filters.write_with_size_change	boolean	query	False	Filter by filters.write_with_size_change
filters.open_with_delete_intent	boolean	query	False	Filter by filters.open_with_delete_intent
filters.first_write	boolean	query	False	Filter by filters.first_write
filters.exclude_directory	boolean	query	False	Filter by filters.exclude_directory
filters.setattr_with_allocation_size_change	boolean	query	False	Filter by filters.setattr_with_allocation_size_change
filters.setattr_with_creation_time_change	boolean	query	False	Filter by filters.setattr_with_creation_time_change

Name	Type	In	Required	Description
filters.setattr_with_group_change	boolean	query	False	Filter by filters.setattr_with_group_change
filters.setattr_with_modify_time_change	boolean	query	False	Filter by filters.setattr_with_modify_time_change
filters.close_with_modification	boolean	query	False	Filter by filters.close_with_modification
filters.first_read	boolean	query	False	Filter by filters.first_read
filters.setattr_with_owner_change	boolean	query	False	Filter by filters.setattr_with_owner_change
filters.close_without_modification	boolean	query	False	Filter by filters.close_without_modification
filters.monitor_ads	boolean	query	False	Filter by filters.monitor_ads
filters.setattr_with_size_change	boolean	query	False	Filter by filters.setattr_with_size_change
filters.close_with_read	boolean	query	False	Filter by filters.close_with_read
filters.setattr_with_dacl_change	boolean	query	False	Filter by filters.setattr_with_dacl_change
filters.offline_bit	boolean	query	False	Filter by filters.offline_bit
monitor_fileop_failure	boolean	query	False	Filter by monitor_fileop_failure • Introduced in: 9.13

Name	Type	In	Required	Description
file_operations.setattr	boolean	query	False	Filter by file_operations.setattr
file_operations.rename	boolean	query	False	Filter by file_operations.rename
file_operations.lookup	boolean	query	False	Filter by file_operations.lookup
file_operations.symlink	boolean	query	False	Filter by file_operations.symlink
file_operations.access	boolean	query	False	Filter by file_operations.access • Introduced in: 9.13
file_operations.link	boolean	query	False	Filter by file_operations.link
file_operations.open	boolean	query	False	Filter by file_operations.open
file_operations.delete_dir	boolean	query	False	Filter by file_operations.delete_dir
file_operations.close	boolean	query	False	Filter by file_operations.close
file_operations.getattr	boolean	query	False	Filter by file_operations.getattr
file_operations.create_dir	boolean	query	False	Filter by file_operations.create_dir
file_operations.rename_dir	boolean	query	False	Filter by file_operations.rename_dir

Name	Type	In	Required	Description
file_operations.read	boolean	query	False	Filter by file_operations.read
file_operations.create	boolean	query	False	Filter by file_operations.create
file_operations.delete	boolean	query	False	Filter by file_operations.delete
file_operations.write	boolean	query	False	Filter by file_operations.write
volume_monitoring	boolean	query	False	Filter by volume_monitoring
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[fpolicy_event]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "name": "event_cifs",
      "protocol": "string",
      "svm": {
        "uuid": "string"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations

Name	Type	Description
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.

Name	Type	Description
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_event

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the FPolicy event configuration for an SVM

POST `/protocols/fpolicy/{svm.uuid}/events`

Introduced In: 9.6

Creates an FPolicy event configuration for a specified SVM. FPolicy event creation is allowed only on data SVMs. When a protocol is specified, you must specify a file operation or a file operation and filters. When FPolicy event is configured to monitor failed file operations, you must specify protocol and file operations. Filters are not supported when failed file operations are monitored.

Required properties

- `svm.uuid` - Existing SVM in which to create the FPolicy event.
- `name` - Name of the FPolicy event.

Recommended optional properties

- `file-operations` - List of file operations to monitor.
- `protocol` - Protocol for which the file operations should be monitored.
- `filters` - List of filters for the specified file operations.
- `monitor-fileop-failure` - Enabled monitoring of failed file operations.

Default property values

If not specified in POST, the following default property values are assigned:

- `file_operations.*` - *false*

- `filters.*` - *false*
- `volume-monitoring` - *false*
- `monitor-fileop-failure` - *false*

Related ONTAP commands

- `fpolicy policy event create`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/events

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.

Name	Type	Description
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

Example request

```
{
  "name": "event_cifs",
  "protocol": "string",
  "svm": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[fpolicy_event]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "name": "event_cifs",
      "protocol": "string",
      "svm": {
        "uuid": "string"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

Error Code	Description
9764929	The file operation is not supported by the protocol
9764955	The filter is not supported by the protocol
9764930	The filter is not supported by any of the file operations
9764946	The protocol is specified without a file operation or a file operation and filter pair

Definitions

See Definitions

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.

Name	Type	Description
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_event

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a specific FPolicy event configuration for an SVM

DELETE `/protocols/fpolicy/{svm.uuid}/events/{name}`

Introduced In: 9.6

Deletes a specific FPolicy event configuration for an SVM. A cluster-level FPolicy event configuration cannot be modified for a data SVM through REST. An FPolicy event that is attached to an FPolicy policy cannot be deleted.

Related ONTAP commands

- `fpolicy policy event delete`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/events

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Error Code	Description
9764874	The FPolicy event is a cluster event
9764947	The FPolicy event is attached to an FPolicy policy

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific FPolicy event configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}/events/{name}`

Introduced In: 9.6

Retrieves a specific FPolicy event configuration for an SVM. A cluster-level FPolicy event configuration cannot be retrieved for a data SVM through a REST API.

Related ONTAP commands

- `fpolicy policy event show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/events

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
name	string	Specifies the name of the FPolicy event.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

Example response

```
{
  "name": "event_cifs",
  "protocol": "string",
  "svm": {
    "uuid": "string"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.

Name	Type	Description
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

svm

Name	Type	Description
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a specific FPolicy event configuration for an SVM

PATCH `/protocols/fpolicy/{svm.uuid}/events/{name}`

Introduced In: 9.6

Updates a specific FPolicy event configuration for an SVM. A cluster-level FPolicy event configuration cannot be modified for a data SVM through REST. When the file operations and filters fields are modified, the previous values are retained and new values are added to the list of previous values. To remove a particular file operation or filter, set its value to false in the request.

Related ONTAP commands

- `fpolicy policy event modify`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/events

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

Example request

```
{
  "protocol": "string",
  "svm": {
    "uuid": "string"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Error Code	Description
9764873	The event is a cluster event
9764929	The file operation is not supported by the protocol
9764955	The filter is not supported by the protocol
9764930	The filter is not supported by any of the file operations
9764946	The protocol is specified without file operation or a file operation and filter pair
9765048	The monitor fileop failure option is set without protocol and file operations

Definitions

See Definitions

file_operations

Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter.
The event will check the operations specified from all client requests using the protocol.

Name	Type	Description
access	boolean	Access operations
close	boolean	File close operations
create	boolean	File create operations
create_dir	boolean	Directory create operations
delete	boolean	File delete operations
delete_dir	boolean	Directory delete operations
getattr	boolean	Get attribute operations
link	boolean	Link operations
lookup	boolean	Lookup operations
open	boolean	File open operations
read	boolean	File read operations
rename	boolean	File rename operations
rename_dir	boolean	Directory rename operations
setattr	boolean	Set attribute operations
symlink	boolean	Symbolic link operations
write	boolean	File write operations

filters

Specifies the list of filters for a given file operation for the specified protocol.
When you specify the filters, you must specify the valid protocols and a valid file operations.

Name	Type	Description
close_with_modification	boolean	Filter the client request for close with modification.
close_with_read	boolean	Filter the client request for close with read.
close_without_modification	boolean	Filter the client request for close without modification.
exclude_directory	boolean	Filter the client requests for directory operations. When this filter is specified directory operations are not monitored.
first_read	boolean	Filter the client requests for the first-read.
first_write	boolean	Filter the client requests for the first-write.
monitor_ads	boolean	Filter the client request for alternate data stream.
offline_bit	boolean	Filter the client request for offline bit set. FPolicy server receives notification only when offline files are accessed.
open_with_delete_intent	boolean	Filter the client request for open with delete intent.
open_with_write_intent	boolean	Filter the client request for open with write intent.
setattr_with_access_time_change	boolean	Filter the client setattr requests for changing the access time of a file or directory.
setattr_with_allocation_size_change	boolean	Filter the client setattr requests for changing the allocation size of a file.
setattr_with_creation_time_change	boolean	Filter the client setattr requests for changing the creation time of a file or directory.

Name	Type	Description
setattr_with_dacl_change	boolean	Filter the client setattr requests for changing dacl on a file or directory.
setattr_with_group_change	boolean	Filter the client setattr requests for changing group of a file or directory.
setattr_with_mode_change	boolean	Filter the client setattr requests for changing the mode bits on a file or directory.
setattr_with_modify_time_change	boolean	Filter the client setattr requests for changing the modification time of a file or directory.
setattr_with_owner_change	boolean	Filter the client setattr requests for changing owner of a file or directory.
setattr_with_sacl_change	boolean	Filter the client setattr requests for changing sacl on a file or directory.
setattr_with_size_change	boolean	Filter the client setattr requests for changing the size of a file.
write_with_size_change	boolean	Filter the client request for write with size change.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_event

The information that a FPolicy process needs to determine what file access operations to monitor and for which of the monitored events notifications should be sent to the external FPolicy server.

Name	Type	Description
file_operations	file_operations	Specifies the file operations for the FPolicy event. You must specify a valid protocol in the protocol parameter. The event will check the operations specified from all client requests using the protocol.
filters	filters	Specifies the list of filters for a given file operation for the specified protocol. When you specify the filters, you must specify the valid protocols and a valid file operations.
monitor_fileop_failure	boolean	Specifies whether failed file operations monitoring is required.
protocol	string	Protocol for which event is created. If you specify protocol, then you must also specify a valid value for the file operation parameters. The value of this parameter must be one of the following: • cifs - for the CIFS protocol. • nfsv3 - for the NFSv3 protocol. • nfsv4 - for the NFSv4 protocol.
svm	svm	
volume_monitoring	boolean	Specifies whether volume operation monitoring is required.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FPolicy persistent store configuration

Protocols fpolicy svm.uuid persistent-stores endpoint overview

Overview

- The FPolicy Persistent Store feature enables the configuration of a Persistent Store. This includes:
- setting up a store to retain event notifications
- specifying the volume created for FPolicy Persistent Store
- defining the size of the volume
- defining the autosize mode for the volume.
- Each SVM can only have one Persistent Store. The same Persistent Store can be used by multiple policies within the same SVM. Once a Persistent Store is created, it can be utilized in the FPolicy policy configuration for the async and non-mandatory engine.

Examples

Creating an FPolicy Persistent Store with all required parameters

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/persistent-stores

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/persistent-stores?return_records=true" -H "accept:
application/json" -d "{\"name\": \"ps1\", \"volume\": \"psvol\", \"size\":
1073741824, \"autosize_mode\": \"off\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "ps1",
    "volume": "psvol",
    "size": 1073741824,
    "autosize_mode": "off"
  }
]
}
```

Creating an FPolicy Persistent Store with the minimum required fields

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/persistent-stores

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/persistent-stores?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{\"name\":
\"ps1\", \"volume\": \"psvol\", \"size\": 1073741824 }"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "ps1",
    "volume": "psvol",
    "size": 1073741824
  }
]
}
```

Retrieving an FPolicy Persistent Store configuration for a specific SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/persistent-stores

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/persistent-
stores/?return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "name": "ps1"
  }
],
"num_records": 1
}
```

Retrieving a specific FPolicy Persistent Store configuration for a specific SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/persistent-stores/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/persistent-
stores/persistent_fpolicy?fields=*&return_records=true&return_timeout=15"
-H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "4f643fb4-fd21-11e8-ae49-0050568e2c1e"
},
"name": "ps1",
"volume": "psvol",
"size": 1073741824,
"autosize_mode": "off"
}
```

Updating an FPolicy Persistent Store for an SVM

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/persistent-stores/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-11e8-
ae49-0050568e2c1e/persistent-stores/persistent_fpolicy" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"volume\":
\"psvol\" , \"size\": 1073741824}"
```

Deleting a specific FPolicy Persistent Store configuration for a specific SVM

```
# The API:
DELETE /protocols/fpolicy/{svm.uuid}/persistent-stores/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/fpolicy/4f643fb4-fd21-
11e8-ae49-0050568e2c1e/persistent-stores/persistent_fpolicy" -H "accept:
application/json"
```

Retrieve the FPolicy persistent store configurations for an SVM

GET `/protocols/fpolicy/{svm.uuid}/persistent-stores`

Introduced In: 9.14

Retrieves FPolicy Persistent Store configurations for a specified SVM.

Related ONTAP commands

- `fpolicy persistent-store show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/persistent-stores

Parameters

Name	Type	In	Required	Description
autosize_mode	string	query	False	Filter by autosize_mode • Introduced in: 9.15
name	string	query	False	Filter by name
size	integer	query	False	Filter by size • Introduced in: 9.15
volume	string	query	False	Filter by volume
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[fpolicy_persistent_store]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "autosize_mode": "string",
      "name": "ps1",
      "size": "100M",
      "svm": {
        "uuid": "string"
      },
      "volume": "psvol"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_persistent_store

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an FPolicy persistent store configuration for an SVM

POST `/protocols/fpolicy/{svm.uuid}/persistent-stores`

Introduced In: 9.14

Creates an FPolicy Persistent Store configuration for a specified SVM.

Important notes:

- FPolicy Persistent Store creation is allowed only on data SVMs.
- In persistent mode, when the Persistent Store is full, event notifications are dropped.
- There is flexibility to provide an existing volume or create a new volume for the persistent storage. The creation of new volume is handled internally.
- For existing volumes, the snapshot policy is set to 'none' and the size is adjusted to the specified value.

Required properties

- `svm.uuid` - Existing SVM in which to create the FPolicy Persistent Store.
- `name` - Name of the FPolicy Persistent Store.
- `volume` - Volume specified for Persistent Store (only FlexVol volumes of type RW are supported).

Optional properties

- `size` - Size of the Persistent Store volume.
- `autosize-mode` - Autosize mode for the Persistent Store volume.

Related ONTAP commands

- `fpolicy persistent-store create`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/persistent-stores

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

Example request

```
{
  "autosize_mode": "string",
  "name": "ps1",
  "size": "100M",
  "svm": {
    "uuid": "string"
  },
  "volume": "psvol"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[fpolicy_persistent_store]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "autosize_mode": "string",
      "name": "ps1",
      "size": "100M",
      "svm": {
        "uuid": "string"
      },
      "volume": "psvol"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

Error Code	Description
9765052	Cannot create more than one Persistent Store per SVM
9765053	Volume mentioned does not exist in the SVM
9765068	The Persistent Store name is too long. It must not exceed 500 characters
2621516	This operation is only supported on a data SVM
9765069	Volume is not a FlexVol volume. Only FlexVol volumes are supported for this operation.
9765072	Volume is not of type RW. Only volumes of type RW are supported.
9765074	Size is a required parameter for the creation of the Persistent Store.
9765077	The SVM is not associated with any aggregates.
524849	Attribute cannot be modified for the target volume because of the specified reason.
917533	The target volume is not eligible for modification due to certain constraints, such as the volume being offline or currently engaged in a volume move operation.
917826	Volume minimum autosize must be greater than zero.
918647	The designated size exceeds the maximum available capacity of the intended volume.
917534	The value specified for the field \"-size\" is too small. Update the field \"-size\" with the minimum size allowed and retry the operation.

Definitions

See Definitions

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_persistent_store

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FPolicy persistent store configuration for an SVM

DELETE `/protocols/fpolicy/{svm.uuid}/persistent-stores/{name}`

Introduced In: 9.14

Deletes a specific FPolicy Persistent Store configuration for an SVM.

Important notes:
An option has been provided to delete the associated volume.

Related ONTAP commands

- `fpolicy persistent-store delete`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/persistent-stores

Parameters

Name	Type	In	Required	Description
name	string	path	True	
delete_volume	boolean	query	False	Delete the associated volume of the Persistent Store. • Introduced in: 9.15 • Default value:

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Error Code	Description
9765064	Persistent Store is active on at least one policy

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FPolicy persistent store configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}/persistent-stores/{name}`

Introduced In: 9.14

Retrieves a specific FPolicy Persistent Store configuration for an SVM.

Related ONTAP commands

- `fpolicy persistent-store show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/persistent-stores

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
autosize_mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows in response to the amount of space used. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.
name	string	The name specified for the FPolicy Persistent Store.
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

Example response

```
{
  "autosize_mode": "string",
  "name": "ps1",
  "size": "100M",
  "svm": {
    "uuid": "string"
  },
  "volume": "psvol"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

svm

Name	Type	Description
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an FPolicy persistent store configuration for an SVM

PATCH `/protocols/fpolicy/{svm.uuid}/persistent-stores/{name}`

Introduced In: 9.14

Updates a specific FPolicy Persistent Store configuration for an SVM.

Important notes:

- If the volume exists, it is set to the size specified and the snapshot policy is set to "none". Otherwise, a new volume is created.
- The autosize parameter is not available in PATCH operations for this endpoint, use the the "autosize" parameter in PATCH for the "/storage/volumes/{uuid}" endpoint instead.
- When the Persistent Store is updated with a new volume, the previous volume is not automatically deleted. An option is provided to delete the previous volume.

Related ONTAP commands

- `fpolicy persistent-store modify`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/persistent-stores

Parameters

Name	Type	In	Required	Description
name	string	path	True	
delete_volume	boolean	query	False	Delete the previous volume of a Persistent Store if a new volume is provided. • Introduced in: 9.15 • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

Example request

```
{
  "size": "100M",
  "svm": {
    "uuid": "string"
  },
  "volume": "psvol"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Error Code	Description
9765053	Volume mentioned does not exist in the SVM
9765056	Specified Persistent Store name does not exist in the SVM
9765069	Volume is not a FlexVol volume. Only FlexVol volumes are supported for this operation.
9765070	Cannot update a Persistent Store volume when it is part of an enabled policy
9765072	Volume is not of type RW. Only volumes of type RW are supported.
9765074	Size is a required parameter for the creation of the Persistent Store.
9765077	The SVM is not associated with any aggregates.
524849	Attribute cannot be modified for the target volume because of the specified reason.
917533	The target volume is not eligible for modification due to certain constraints, such as the volume being offline or currently engaged in a volume move operation.
917826	Volume minimum autosize must be greater than zero.
918647	The designated size exceeds the maximum available capacity of the intended volume.

Error Code	Description
917534	The value specified for the field \"-size\" is too small. Update the field \"-size\" with the minimum size allowed and retry the operation.

Definitions

See Definitions

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_persistent_store

The information that an FPolicy process needs in order to configure a Persistent Store.

Name	Type	Description
size	integer	The size of the Persistent Store volume, in bytes.
svm	svm	
volume	string	The specified volume to store the events for the FPolicy Persistent Store.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SVM FPolicy configuration

Protocols fpolicy svm.uuid policies endpoint overview

Overview

The FPolicy policy acts as a container for different constituents of the FPolicy such as FPolicy events and the FPolicy engine. It also provides a platform for policy management functions, such as policy enabling and disabling. As part of FPolicy policy configuration, you can specify the name of policy, the SVM to which it belongs, the FPolicy events to monitor, the FPolicy engine to which the generated notifications are sent and the policy priority. FPolicy policy configuration also allows to you to configure the file access behavior when the primary and secondary servers are down. Under such circumstances, if the "mandatory" field is set to true, file access is denied.

Each FPolicy policy is associated with a scope which allows you to restrain the scope of the policy to specified storage objects such as volume, shares and export or to a set of file extensions such as .txt, .jpeg. An FPolicy policy can be configured to send notifications, to the FPolicy server or for native file blocking which uses the file extension specified in the policy scope. An SVM can have multiple FPolicy policies which can be enabled or disabled independently of each other.

Examples

Creating an FPolicy policy

Use the following API to create an FPolicy policy configuration. Note that the *return_records=true* query parameter used to obtain the newly created entry in the response.

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"engine\": {
\"name\": \"engine1\" }, \"events\": [ { \"name\": \"cifs\" }, { \"name\":
\"nfs\" } ], \"mandatory\": true, \"name\": \"FPolicy_policy_0\",
\"passthrough_read\": true, \"privileged_user\": \"mydomain\\\\testuser\",
\"scope\": { \"exclude_export_policies\": [ \"export_pol1\" ],
\"exclude_extension\": [ \"txt\", \"png\" ], \"exclude_shares\": [ \"sh1\"
], \"exclude_volumes\": [ \"vol0\" ], \"include_export_policies\": [
\"export_pol10\" ], \"include_extension\": [ \"pdf\" ],
\"include_shares\": [ \"sh2\", \"sh3\" ], \"include_volumes\": [ \"vol1\",
\"vol2\" ] }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "FPolicy_policy_0",
```

```
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
      ],
    "engine": {
      "name": "engine1"
    },
    "scope": {
      "include_shares": [
        "sh2",
        "sh3"
      ],
      "exclude_shares": [
        "sh1"
      ],
      "include_volumes": [
        "vol1",
        "vol2"
      ],
      "exclude_volumes": [
        "vol0"
      ],
      "include_export_policies": [
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "privileged_user": "mydomain\\testuser",
    "passthrough_read": true
  }
]
}
```

Creating and enable an FPolicy policy

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"priority\":
1, \"engine\": { \"name\": \"engine1\" }, \"events\": [ { \"name\":
\"cifs\" }, { \"name\": \"nfs\" } ], \"mandatory\": true, \"name\":
\"FPolicy_policy_on\", \"passthrough_read\": false, \"scope\": {
\"exclude_export_policies\": [ \"export_pol1\" ], \"exclude_extension\": [
\"txt\", \"png\" ], \"exclude_shares\": [ \"sh1\" ], \"exclude_volumes\":
[ \"vol0\" ], \"include_export_policies\": [ \"export_pol10\" ],
\"include_extension\": [ \"pdf\" ], \"include_shares\": [ \"sh2\", \"sh3\"
], \"include_volumes\": [ \"vol1\", \"vol2\" ] }}"

# The response:
{
"num_records": 1,
"records": [
  {
   "name": "FPolicy_policy_0",
   "priority": 1,
   "events": [
     {
       "name": "cifs"
     },
     {
       "name": "nfs"
     }
   ],
   "engine": {
     "name": "engine1"
   },
   "scope": {
     "include_shares": [
       "sh2",
       "sh3"
     ],
     "exclude_shares": [
       "sh1"
     ],
```

```
      "include_volumes": [
        "vol1",
        "vol2"
      ],
      "exclude_volumes": [
        "vol0"
      ],
      "include_export_policies": [
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "privileged_user": "mydomain\\testuser",
    "passthrough_read": true
  }
  ]
}
```

Creating an FPolicy policy with the minimum required fields and a native engine

```
# The API:
POST /protocols/fpolicy/{svm.uuid}/policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"events\": [
{ \"name\": \"cifs\" }, { \"name\": \"nfs\" } ], \"name\":
\"pol_minimum_fields\", \"scope\": { \"include_volumes\": [ \"vol1\",
\"vol2\" ] }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "pol_minimum_fields",
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
    ],
    "scope": {
      "include_volumes": [
        "vol1",
        "vol2"
      ]
    }
  }
]
}
```

Retrieving all the FPolicy policy configurations for an SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/policies

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies?fields=*&return_records=true&return_timeout=15"
-H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "pol0",
    "enabled": false,
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
    ],
    "engine": {
      "name": "engine1"
    },
    "scope": {
      "include_shares": [
        "sh2",
        "sh3"
      ],
      "exclude_shares": [
        "sh1"
      ],
      "include_volumes": [
        "vol1",
        "vol2"
      ],
      "exclude_volumes": [
        "vol0"
      ],
      "include_export_policies": [
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
```

```
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  },
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "FPolicy_policy_on",
    "enabled": true,
    "priority": 1,
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
    ],
    "engine": {
      "name": "engine1"
    },
     "scope": {
      "include_shares": [
        "sh2",
        "sh3"
      ],
      "exclude_shares": [
        "sh1"
      ],
      "include_volumes": [
        "vol1",
        "vol2"
      ],
      "exclude_volumes": [
        "vol0"
      ],
      "include_export_policies": [
```

```
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  },
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "cluster_pol",
    "enabled": false,
    "events": [
      {
        "name": "cluster"
      }
    ],
    "engine": {
      "name": "native"
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  },
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "pol_minimum_fields",
    "enabled": false,
    "events": [
      {
        "name": "cifs"
```

```
      },
      {
        "name": "nfs"
      }
    ],
    "engine": {
      "name": "native"
    },
    "scope": {
      "include_volumes": [
        "vol1",
        "vol2"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  }
],
"num_records": 4
}
```

Retrieving all of the FPolicy policy configurations for the FPolicy engine "engine1" for an SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/policies/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-
0050568eeb34/policies?engine.name=engine1&fields=*&return_records=true&ret
urn_timeout=15" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "pol0",
```

```
    "enabled": false,
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
    ],
    "engine": {
      "name": "engine1"
    },
    "scope": {
      "include_export_policies": [
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  },
  {
    "svm": {
      "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
    },
    "name": "FPolicy_policy_on",
    "enabled": true,
    "priority": 1,
    "events": [
      {
        "name": "cifs"
      },
      {
        "name": "nfs"
      }
```

```
    ],
    "engine": {
      "name": "engine1"
    },
    "scope": {
      "include_shares": [
        "sh2",
        "sh3"
      ],
      "exclude_shares": [
        "sh1"
      ],
      "include_volumes": [
        "vol1",
        "vol2"
      ],
      "exclude_volumes": [
        "vol0"
      ],
      "include_export_policies": [
        "export_pol10"
      ],
      "exclude_export_policies": [
        "export_pol1"
      ],
      "include_extension": [
        "pdf"
      ],
      "exclude_extension": [
        "txt",
        "png"
      ]
    },
    "mandatory": true,
    "passthrough_read": false,
    "allow_privileged_access": false,
    "persistent_store": "ps1"
  }
],
"num_records": 2
}
```

Retrieving a particular FPolicy policy configuration for an SVM

```
# The API:
GET /protocols/fpolicy/{svm.uuid}/policies/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies/pol0" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "a00fac5d-0164-11e9-b64a-0050568eeb34"
},
"name": "pol0",
"enabled": false,
"events": [
  {
    "name": "cifs"
  },
  {
    "name": "nfs"
  }
],
"engine": {
  "name": "engine1"
},
"scope": {
  "include_shares": [
    "sh2",
    "sh3"
  ],
  "exclude_shares": [
    "sh1"
  ],
  "include_volumes": [
    "vol1",
    "vol2"
  ],
  "exclude_volumes": [
    "vol0"
  ],
  "include_export_policies": [
    "export_pol10"
```

```
  ],
  "exclude_export_policies": [
    "export_pol1"
  ],
  "include_extension": [
     "pdf"
  ],
  "exclude_extension": [
    "txt",
    "png"
  ]
},
"mandatory": true,
"passthrough_read": false,
"allow_privileged_access": false,
"persistent_store": "ps1"
}
```

Updating a particular FPolicy policy

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/policies/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies/pol0" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"engine\": { \"name\": \"native\"
}, \"events\": [ { \"name\": \"cifs\" } ], \"mandatory\": false,
\"scope\": { \"include_volumes\": [ \"*\" ] }}"
```

Enabling a particular FPolicy policy

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/policies/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies/pol0" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"enabled\": true, \"priority\":
3}"
```

Disabling a particular FPolicy policy

```
# The API:
PATCH /protocols/fpolicy/{svm.uuid}/policies/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/fpolicy/a00fac5d-0164-11e9-
b64a-0050568eeb34/policies/pol0" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"enabled\": true }"
```

Retrieve an FPolicy configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}/policies`

Introduced In: 9.6

Retrieves the FPolicy policy configuration of an SVM. ONTAP allows the creation of a cluster level FPolicy policy that acts as a template for all the data SVMs belonging to the cluster. This cluster level FPolicy policy is also retrieved for the specified SVM.

Related ONTAP commands

- `fpolicy policy show`
- `fpolicy policy scope show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
mandatory	boolean	query	False	Filter by mandatory
enabled	boolean	query	False	Filter by enabled
passthrough_read	boolean	query	False	Filter by passthrough_read • Introduced in: 9.10
priority	integer	query	False	Filter by priority • Max value: 10 • Min value: 1
allow_privileged_access	boolean	query	False	Filter by allow_privileged_access • Introduced in: 9.13
engine.name	string	query	False	Filter by engine.name
events.name	string	query	False	Filter by events.name
privileged_user	string	query	False	Filter by privileged_user • Introduced in: 9.10
name	string	query	False	Filter by name
persistent_store	string	query	False	Filter by persistent_store • Introduced in: 9.14
scope.exclude_volumes	string	query	False	Filter by scope.exclude_volumes

Name	Type	In	Required	Description
scope.exclude_extension	string	query	False	Filter by scope.exclude_extension
scope.exclude_shares	string	query	False	Filter by scope.exclude_shares
scope.include_volumes	string	query	False	Filter by scope.include_volumes
scope.exclude_export_policies	string	query	False	Filter by scope.exclude_export_policies
scope.include_export_policies	string	query	False	Filter by scope.include_export_policies
scope.include_extension	string	query	False	Filter by scope.include_extension
scope.object_monitoring_with_no_extension	boolean	query	False	Filter by scope.object_monitoring_with_no_extension • Introduced in: 9.11
scope.include_shares	string	query	False	Filter by scope.include_shares
scope.check_extensions_on_directories	boolean	query	False	Filter by scope.check_extensions_on_directories • Introduced in: 9.11
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records
records	array[fpolicy_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "engine": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string"
      },
      "events": [
        "event_cifs",
        "event_open"
      ],
      "name": "fp_policy_1",
      "persistent_store": "ps1",
      "priority": 1,
      "privileged_user": "mydomain\\testuser",
      "scope": {
        "exclude_export_policies": [
          "string"
        ],
        "exclude_extension": [
          "string"
        ],
        "exclude_shares": [
          "string"
        ],
        "exclude_volumes": [
          "vol1",
          "vol_svm1",
          "*"
        ],
        "include_export_policies": [
```

```
          "string"
        ],
        "include_extension": [
          "string"
        ],
        "include_shares": [
          "sh1",
          "share_cifs"
        ],
        "include_volumes": [
          "vol1",
          "vol_svm1"
        ]
      },
      "svm": {
        "uuid": "string"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
_links	_links	
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
_links	_links	
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_policy

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.

Name	Type	Description
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an FPolicy configuration for an SVM

POST `/protocols/fpolicy/{svm.uuid}/policies`

Introduced In: 9.6

Creates an FPolicy policy configuration for the specified SVM. To create an FPolicy policy, you must specify the policy scope and the FPolicy events to be monitored.

Important notes:

- A single policy can monitor multiple events.
- An FPolicy engine is an optional field whose default value is set to native. A native engine can be used to simply block the file access based on the file extensions specified in the policy scope.
- To enable a policy, the policy priority must be specified. If the priority is not specified, the policy is created but it is not enabled.
- The "mandatory" field, if set to true, blocks the file access when the primary or secondary FPolicy servers are down.

Required properties

- `svm.uuid` - Existing SVM in which to create the FPolicy policy.
- `events` - Name of the events to monitor.
- `name` - Name of the FPolicy policy.
- `scope` - Scope of the policy. Can be limited to exports, volumes, shares or file extensions.
- `priority`- Priority of the policy (ranging from 1 to 10).

Default property values

- `mandatory` - *true*
- `engine` - *native*

Related ONTAP commands

- `fpolicy policy scope create`
- `fpolicy policy create`
- `fpolicy enable`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.

Name	Type	Description
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

Example request

```
{
  "allow_privileged_access": true,
  "enabled": true,
  "engine": {
    "name": "string"
  },
  "events": [
    "event_cifs",
    "event_open"
  ],
  "name": "fp_policy_1",
  "persistent_store": "ps1",
  "priority": 1,
  "privileged_user": "mydomain\\testuser",
  "scope": {
    "exclude_export_policies": [
      "string"
    ],
    "exclude_extension": [
      "string"
    ],
    "exclude_shares": [
      "string"
    ],
    "exclude_volumes": [
      "vol1",
      "vol_svm1",
      "*"
    ],
    "include_export_policies": [
      "string"
    ],
    "include_extension": [
      "string"
    ],
    "include_shares": [
      "sh1",
      "share_cifs"
    ],
    "include_volumes": [
      "vol1",
      "vol_svm1"
    ]
  },
```

```
  "svm": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of Records
records	array[fpolicy_policy]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "allow_privileged_access": true,
      "enabled": true,
      "engine": {
        "name": "string"
      },
      "events": [
        "event_cifs",
        "event_open"
      ],
      "name": "fp_policy_1",
      "persistent_store": "ps1",
      "priority": 1,
      "privileged_user": "mydomain\\testuser",
      "scope": {
        "exclude_export_policies": [
          "string"
        ],
        "exclude_extension": [
          "string"
        ],
        "exclude_shares": [
          "string"
        ],
        "exclude_volumes": [
          "vol1",
          "vol_svm1",
          "*"
        ],
        "include_export_policies": [
          "string"
        ],
        "include_extension": [
          "string"
        ],
        "include_shares": [
          "sh1",
          "share_cifs"
        ],
        "include_volumes": [
          "vol1",
```

```
            "vol_svm1"
          ]
        },
        "svm": {
          "uuid": "string"
        }
      }
    ]
  }
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764875	An FPolicy event does not exist
9764888	An FPolicy engine does not exist
9764898	An FPolicy policy cannot be created without defining its scope
9765027	FPolicy creation is successful but it cannot be enabled as the priority is already in use by another policy
9765037	FPolicy creation failed as passthrough-read cannot be enabled for policy without privileged user
9765038	Passthrough-read policies are not supported with asynchronous external engine
9765056	The specified Persistent Store does not exist
9765059	Persistent Store feature is not supported with native engine
9765060	Persistent Store feature is not supported with synchronous engine
9765061	Persistent Store feature is not supported with mandatory screening

Error Code	Description
9765065	A valid privileged user name must be in the form "domain-name\user-name"
9765066	The privileged user contains characters that are not allowed

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	

Name	Type	Description
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_policy

Name	Type	Description
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.

Name	Type	Description
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FPolicy configuration for an SVM

DELETE `/protocols/fpolicy/{svm.uuid}/policies/{name}`

Introduced In: 9.6

Deletes a particular FPolicy policy configuration for a specified SVM. To delete a policy, you must first disable the policy.

Related ONTAP commands

- `fpolicy policy scope delete`
- `fpolicy policy delete`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764900	Deletion of a cluster level FPolicy policy is not supported

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FPolicy configuration for an SVM

GET `/protocols/fpolicy/{svm.uuid}/policies/{name}`

Introduced In: 9.6

Retrieves a particular FPolicy policy configuration for a specified SVM. Cluster-level FPolicy policy configuration details cannot be retrieved for a data SVM.

Related ONTAP commands

- `fpolicy policy show`
- `fpolicy policy scope show`
- `fpolicy show`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
name	string	Specifies the name of the policy.

Name	Type	Description
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

Example response


```
{
  "engine": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string"
  },
  "events": [
    "event_cifs",
    "event_open"
  ],
  "name": "fp_policy_1",
  "persistent_store": "ps1",
  "priority": 1,
  "privileged_user": "mydomain\\testuser",
  "scope": {
    "exclude_export_policies": [
      "string"
    ],
    "exclude_extension": [
      "string"
    ],
    "exclude_shares": [
      "string"
    ],
    "exclude_volumes": [
      "vol1",
      "vol_svm1",
      "*"
    ],
    "include_export_policies": [
      "string"
    ],
    "include_extension": [
      "string"
    ],
    "include_shares": [
      "sh1",
      "share_cifs"
    ],
    "include_volumes": [
      "vol1",
```

```
        "vol_svm1"
      ]
    },
    "svm": {
      "uuid": "string"
    }
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
_links	_links	
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
_links	_links	
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.

Name	Type	Description
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

svm

Name	Type	Description
uuid	string	SVM UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an FPolicy configuration for an SVM

PATCH `/protocols/fpolicy/{svm.uuid}/policies/{name}`

Introduced In: 9.6

Updates a particular FPolicy policy configuration for a specified SVM. PATCH can be used to enable or disable the policy. When enabling a policy, you must specify the policy priority. The policy priority of the policy is not required when disabling the policy. If the policy is enabled, the FPolicy policy cannot be modified.

Related ONTAP commands

- `fpolicy policy modify`
- `fpolicy policy scope modify`
- `fpolicy enable`
- `fpolicy disable`

Learn more

- DOC /protocols/fpolicy/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.

Name	Type	Description
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

Example request

```
{
  "engine": {
    "name": "string"
  },
  "events": [
    "event_cifs",
    "event_open"
  ],
  "persistent_store": "ps1",
  "priority": 1,
  "privileged_user": "mydomain\\testuser",
  "scope": {
    "exclude_export_policies": [
      "string"
    ],
    "exclude_extension": [
      "string"
    ],
    "exclude_shares": [
      "string"
    ],
    "exclude_volumes": [
      "vol1",
      "vol_svm1",
      "*"
    ],
    "include_export_policies": [
      "string"
    ],
    "include_extension": [
      "string"
    ],
    "include_shares": [
      "sh1",
      "share_cifs"
    ],
    "include_volumes": [
      "vol1",
      "vol_svm1"
    ]
  },
  "svm": {
    "uuid": "string"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9764875	An FPolicy event does not exist
9764888	An FPolicy engine does not exist
9765026	The priority must be specified when enabling the FPolicy policy
9765025	Cannot disable an FPolicy policy when the priority is specified
9764899	Cannot modify an enabled FPolicy policy
9764899	Deletion of a cluster policy is not supported
9764907	An FPolicy policy is already enabled
9764908	An FPolicy policy is already disabled
9765029	An FPolicy was modified but disable/enable failed as the policy is already disabled/enabled
9765036	Cannot modify an FPolicy policy as passthrough-read policies are not supported without privileged user
9765038	Passthrough-read policies are not supported with an external engine of type "asynchronous"
9765039	Passthrough-read policies are not supported with native engine
9765056	The specified Persistent Store does not exist
9765062	Policy with Persistent Store does not support mandatory screening
9765065	A valid privileged user name must be in the form "domain-name\user-name"
9765066	The privileged user contains characters that are not allowed

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

fpolicy_engine_reference

FPolicy external engine

Name	Type	Description
name	string	The name of the FPolicy external engine.

fpolicy_event_reference

FPolicy events

Name	Type	Description
name	string	

scope

Name	Type	Description
check_extensions_on_directories	boolean	Specifies whether the file name extension checks also apply to directory objects. If this parameter is set to true, the directory objects are subjected to the same extension checks as regular files. If this parameter is set to false, the directory names are not matched for extensions and notifications are sent for directories even if their name extensions do not match. Default is false.
exclude_export_policies	array[string]	
exclude_extension	array[string]	
exclude_shares	array[string]	
exclude_volumes	array[string]	
include_export_policies	array[string]	

Name	Type	Description
include_extension	array[string]	
include_shares	array[string]	
include_volumes	array[string]	
object_monitoring_with_no_extension	boolean	Specifies whether the extension checks also apply to objects with no extension. If this parameter is set to true, all objects with or without extensions are monitored. Default is false.

svm

Name	Type	Description
uuid	string	SVM UUID

fpolicy_policy

Name	Type	Description
allow_privileged_access	boolean	Specifies whether privileged access is required for FPolicy servers. Privileged access is used when the FPolicy server requires direct access to the cluster nodes. When this parameter is set to true, FPolicy servers can access files on the cluster using a separate data channel with privileged access.
enabled	boolean	Specifies if the policy is enabled on the SVM or not. If no value is mentioned for this field but priority is set, then this policy will be enabled.
engine	fpolicy_engine_reference	FPolicy external engine
events	array[fpolicy_event_reference]	

Name	Type	Description
mandatory	boolean	Specifies what action to take on a file access event in a case when all primary and secondary servers are down or no response is received from the FPolicy servers within a given timeout period. When this parameter is set to true, file access events will be denied under these circumstances.
passthrough_read	boolean	Specifies whether passthrough-read should be allowed for FPolicy servers registered for the policy. Passthrough-read is a way to read data for offline files without restoring the files to primary storage. Offline files are files that have been moved to secondary storage.
persistent_store	string	Specifies the persistent storage name. This can then be used to enable persistent mode for FPolicy events.
priority	integer	Specifies the priority that is assigned to this policy.
privileged_user	string	Specifies the privileged user name for accessing files on the cluster using a separate data channel with privileged access. The input for this field should be in "domain\username" format.
scope	scope	
svm	svm	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View lock details

Protocols locks endpoint overview

Overview

A lock is a synchronization mechanism for enforcing limits on concurrent access to files where many clients can be
accessing the same file at the same time. Locks can be viewed or broken according to a wide range of query fields
that are presented in the lock information definition.

It is recommended that you provide as many fields as possible to optimize query processing.

Examples

Retrieving locks with all fields for all SVMs

```
# The API:
GET /protocols/locks

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/locks?return_records=true&return_timeout=15&fields=*" -H
"accept: application/json"

# The response:
{
"records": [
```

```
  {
    "svm": {
      "uuid": "5b4b6847-9ae4-11eb-8597-0050568ec154",
      "name": "vs1"
    },
    "volume": {
      "uuid": "429dcc79-9af2-11eb-b313-0050568ec154",
      "name": "test_vol1"
    },
    "interface": {
      "name": "vs1.data",
      "uuid": "6bf26e25-9ae4-11eb-8597-0050568ec154",
      "ip": {
        "address": "10.140.115.95"
      }
    },
    "path": "/test_vol1/Demo406.TXT",
    "uuid": "bf03d8b4-e145-498a-902d-b9fe5d546d18",
    "constituent": false,
    "protocol": "cifs",
    "client_address": "10.74.7.22",
    "owner_id": "feff-
020600000002000000020400000000000000000000000ffff0a4a07161053010001000000
030000006c00000000000000",
    "share_lock": {
      "mode": "read_write_deny_write_delete",
      "soft": false
    },
    "smb": {
      "connect_state": "connected",
      "open_group_id":
"71756e2325a7eb11843f005056a4731c101068450bcdffff1c2c000000000000",
      "open_type": "durable"
    },
    "state": "granted",
    "type": "share_level",
    "node": {
      "name": "user-vsim3",
      "uuid": "1f29b875-9ae3-11eb-8597-0050568ec154"
    }
  },
  {
    "svm": {
      "uuid": "5b4b6847-9ae4-11eb-8597-0050568ec154",
      "name": "vs1"
    },
```

```
    "volume": {
      "uuid": "429dcc79-9af2-11eb-b313-0050568ec154",
      "name": "test_vol1"
    },
    "interface": {
      "name": "vs1.data",
      "uuid": "6bf26e25-9ae4-11eb-8597-0050568ec154",
      "ip": {
        "address": "10.140.115.95"
      }
    },
    "path": "/test_vol1/Demo406.TXT",
    "uuid": "0c33d18d-dcbc-492a-81b3-4c5740c46172",
    "constituent": false,
    "protocol": "cifs",
    "client_address": "10.74.7.22",
    "oplock_level": "batch",
    "owner_id": "feff-
020600000002000000020400000000000000000000000ffff0a4a07161053010001000000
030000006c00000000000000",
    "smb": {
      "connect_state": "connected",
      "open_group_id":
"71756e2325a7eb11843f005056a4731c101068450bcdffff1c2c000000000000"
    },
    "state": "granted",
    "type": "op_lock",
    "node": {
      "name": "user-vsim3",
      "uuid": "1f29b875-9ae3-11eb-8597-0050568ec154"
    }
  }
],
"num_records": 2
}
```


Retrieving locks of a specific volume

```
# The API:
GET /protocols/locks

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/protocols/locks?volume.uuid=429dcc79-
9af2-11eb-b313-
0050568ec154&return_records=true&return_timeout=15&fields=*" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "5b4b6847-9ae4-11eb-8597-0050568ec154",
      "name": "vs1"
    },
    "volume": {
      "uuid": "429dcc79-9af2-11eb-b313-0050568ec154",
      "name": "test_vol1"
    },
    "interface": {
      "name": "vs1.data",
      "uuid": "6bf26e25-9ae4-11eb-8597-0050568ec154"
    },
    "path": "/test_vol1/Demo408.TXT",
    "uuid": "be1cdf00-37f1-4477-b6d0-bba8c4fa8c67"
  },
  {
    "svm": {
      "uuid": "5b4b6847-9ae4-11eb-8597-0050568ec154",
      "name": "vs1"
    },
    "volume": {
      "uuid": "429dcc79-9af2-11eb-b313-0050568ec154",
      "name": "test_vol1"
    },
    "interface": {
      "name": "vs1.data",
      "uuid": "6bf26e25-9ae4-11eb-8597-0050568ec154"
    },
    "path": "/test_vol1/Demo408.TXT",
    "uuid": "393cc06e-8b37-4f49-b09a-74d1eef79368"
  }
],
"num_records": 2
}
```

Retrieving the lock for a specific UUID

```
# The API:
GET /protocols/locks/{uuid}

# The call:
curl  -X GET "https://<mgmt-ip>/api/protocols/locks/be1cdf00-37f1-4477-
b6d0-bba8c4fa8c67" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "5b4b6847-9ae4-11eb-8597-0050568ec154",
  "name": "vs1"
},
"volume": {
  "uuid": "429dcc79-9af2-11eb-b313-0050568ec154",
  "name": "test_vol1"
},
"interface": {
  "name": "vs1.data",
  "uuid": "6bf26e25-9ae4-11eb-8597-0050568ec154",
  "ip": {
    "address": "10.140.115.95"
  }
},
"path": "/test_vol1/Demo406.TXT",
"uuid": "be1cdf00-37f1-4477-b6d0-bba8c4fa8c67",
"constituent": false,
"protocol": "cifs",
"client_address": "10.74.7.22",
"owner_id": "feff-
020600000002000000020400000000000000000000000ffff0a4a07161053010001000000
030000006c00000000000000",
"share_lock": {
  "mode": "read_write_deny_write_delete",
  "soft": false
},
"smb": {
  "connect_state": "connected",
  "open_group_id":
"71756e2325a7eb11843f005056a4731c101068450bcdffff1c2c000000000000",
  "open_type": "durable"
},
```

```
"state": "granted",
"type": "share_level",
"node": {
  "name": "user-vsim3",
  "uuid": "1f29b875-9ae3-11eb-8597-0050568ec154"
}
}
```

Deleting the lock for a specific UUID

```
# The API:
DELETE /protocols/locks/{uuid}

# The call:
curl  -X DELETE "https://<mgmt-ip>/api/protocols/locks/be1cdf00-37f1-4477-
b6d0-bba8c4fa8c67" -H "accept: application/json"
```

Deleting all locks for a specific protocol

```
# The API:
DELETE /protocols/locks/{uuid}

# The call:
curl  -X DELETE "https://<mgmt-ip>/api/protocols/locks?protocol=cifs" -H
"accept: application/json"
```

Retrieve lock details

GET `/protocols/locks`

Introduced In: 9.10

Retrieves locks details.

Related ONTAP commands

- `vserver locks show`

Parameters

Name	Type	In	Required	Description
owner_id	string	query	False	Filter by owner_id
interface.name	string	query	False	Filter by interface.name
interface.ip.address	string	query	False	Filter by interface.ip.address
interface.uuid	string	query	False	Filter by interface.uuid
smb.open_type	string	query	False	Filter by smb.open_type
smb.open_group_id	string	query	False	Filter by smb.open_group_id
smb.connect_state	string	query	False	Filter by smb.connect_state
share_lock.mode	string	query	False	Filter by share_lock.mode
share_lock.soft	boolean	query	False	Filter by share_lock.soft
state	string	query	False	Filter by state
byte_lock.offset	integer	query	False	Filter by byte_lock.offset
byte_lock.mandatory	boolean	query	False	Filter by byte_lock.mandatory
byte_lock.super	boolean	query	False	Filter by byte_lock.super
byte_lock.exclusive	boolean	query	False	Filter by byte_lock.exclusive
byte_lock.length	integer	query	False	Filter by byte_lock.length

Name	Type	In	Required	Description
byte_lock.soft	boolean	query	False	Filter by byte_lock.soft
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
path	string	query	False	Filter by path
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
protocol	string	query	False	Filter by protocol
uuid	string	query	False	Filter by uuid
constituent	boolean	query	False	Filter by constituent
delegation	string	query	False	Filter by delegation
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
oplock_level	string	query	False	Filter by oplock_level
client_address	string	query	False	Filter by client_address
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[client_lock]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "byte_lock": {
        "length": "10",
        "offset": "100"
      },
      "client_address": "0.0.0.0",
      "delegation": "string",
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "oplock_level": "string",
      "owner_id": "string",
      "path": "string",
      "protocol": "string",
      "share_lock": {
```

```
          "mode": "string"
        },
        "smb": {
          "connect_state": "string",
          "open_group_id": "string",
          "open_type": "string"
        },
        "state": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "type": "string",
        "uuid": "ceeac1b4-8646-4c76-a054-1c96e87594aa",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Unexpected error_response
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

byte_lock

Name	Type	Description
exclusive	boolean	Indicates whether it is an exclusive bytelock.
length	integer	Length of the bytelock starting from the offset.
mandatory	boolean	Indicates whether or not the bytelock is mandatory.
offset	integer	Starting offset for a bytelock.
soft	boolean	Indicates whether it is a soft bytelock.
super	boolean	Indicates whether it is a super bytelock.

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

share_lock

Name	Type	Description
mode	string	Types of share lock modes.
soft	boolean	Indicates whether it is a soft share lock.

smb

Name	Type	Description
connect_state	string	SMB connection state.
open_group_id	string	SMB open group ID.
open_type	string	SMB open type.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

client_lock

This object represents locks on a volume.

Name	Type	Description
byte_lock	byte_lock	
client_address	string	IP address of the client holding the lock.
constituent	boolean	Indicate if volume is constituent or not.
delegation	string	Type of delegation.

Name	Type	Description
interface	interface	A network interface. Either UUID or name may be supplied on input.
node	node	
oplock_level	string	The oplock level determines which operations the client may cache locally.
owner_id	string	Owner ID.
path	string	Object path
protocol	string	Type of lock protocol.
share_lock	share_lock	
smb	smb	
state	string	State of lock.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of lock.
uuid	string	Lock UUID
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete locks for a parameter

DELETE `/protocols/locks/{uuid}`

Introduced In: 9.10

Deletes locks of given parameter.

Related ONTAP commands

- `vserver locks break`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Lock ID

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the lock for a specific UUID

GET `/protocols/locks/{uuid}`

Introduced In: 9.10

Retrieves the lock for a specific UUID.

Related ONTAP commands

- `vserver locks show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Lock ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
byte_lock	byte_lock	
client_address	string	IP address of the client holding the lock.
constituent	boolean	Indicate if volume is constituent or not.
delegation	string	Type of delegation.
interface	interface	A network interface. Either UUID or name may be supplied on input.
node	node	
oplock_level	string	The oplock level determines which operations the client may cache locally.
owner_id	string	Owner ID.
path	string	Object path
protocol	string	Type of lock protocol.
share_lock	share_lock	

Name	Type	Description
smb	smb	
state	string	State of lock.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of lock.
uuid	string	Lock UUID
volume	volume	

Example response


```
{
  "byte_lock": {
    "length": "10",
    "offset": "100"
  },
  "client_address": "0.0.0.0",
  "delegation": "string",
  "interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "oplock_level": "string",
  "owner_id": "string",
  "path": "string",
  "protocol": "string",
  "share_lock": {
    "mode": "string"
  },
  "smb": {
    "connect_state": "string",
    "open_group_id": "string",
    "open_type": "string"
  },
  "state": "string",
  "svm": {
    "_links": {
      "self": {
```

```
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "type": "string",
    "uuid": "ceeac1b4-8646-4c76-a054-1c96e87594aa",
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

byte_lock

Name	Type	Description
exclusive	boolean	Indicates whether it is an exclusive bytelock.
length	integer	Length of the bytelock starting from the offset.
mandatory	boolean	Indicates whether or not the bytelock is mandatory.
offset	integer	Starting offset for a bytelock.
soft	boolean	Indicates whether it is a soft bytelock.
super	boolean	Indicates whether it is a super bytelock.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

share_lock

Name	Type	Description
mode	string	Types of share lock modes.
soft	boolean	Indicates whether it is a soft share lock.

smb

Name	Type	Description
connect_state	string	SMB connection state.
open_group_id	string	SMB open group ID.
open_type	string	SMB open type.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

View NFS client information

Protocols NFS connected-client-maps endpoint overview

Overview

ONTAP connected clients map functionality is mainly used by the System Manager to display client information.

The following are details of the fields retrieved for the Connected Clients MAP GET API:

node.name: Node name hosting this record, essentially the node hosting the "server_ip".
node.uuid: Node UUID hosting this record, essentially the node hosting the "server_ip".
svm.name: SVM name to which the "server_ip" belongs to.
svm.uuid: SVM UUID to which the "server_ip" belongs to.
server_ip: All clients that are connected to this interface are displayed in rows.
client_ips: List of client IP addresses connected to the interface.

Example

Retrieving connected client Map information

```
# The API:
GET /protocols/nfs/connected-client-maps

# The call:
curl -X GET "https://<cluster-mgmt-ip>/api/protocols/nfs/connected-client-
maps?return_timeout=15&return_records=true" -H "accept: application/json"

# The response:
{
"records": [
 {
   "svm": {
     "uuid": "c642db55-b8d0-11e9-9ad1-0050568e8480",
     "name": "vs1"
   },
   "node": {
     "uuid": "cc282893-b82f-11e9-a3ad-0050568e8480",
     "name": "vsim1"
   },
   "server_ip": "10.140.72.214",
   "client_ips": [
     "127.0.0.1"
   ]
 }],
 "num_records": 1
}
```

Retrieve NFS client information

GET `/protocols/nfs/connected-client-maps`

Introduced In: 9.11

Retrieves NFS clients information.

Parameters

Name	Type	In	Required	Description
client_ips	string	query	False	Filter by client_ips
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
node.uuid	string	query	False	Filter by node.uuid

Name	Type	In	Required	Description
node.name	string	query	False	Filter by node.name
server_ip	string	query	False	Filter by server_ip
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[nfs_clients_map]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "client_ips": [
        "127.0.0.1"
      ],
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "server_ip": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nfs_clients_map

Name	Type	Description
_links	_links	

Name	Type	Description
client_ips	array[string]	Specifies the IP address of the client.
node	node	
server_ip	string	Specifies the IP address of the server.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update NFS client settings

Protocols NFS connected-client-settings endpoint overview

Overview

This cluster-wide API is used to set the maximum cache idle time (client_retention_interval) for the connected-clients cache. If a
client connected to NFS server is idle for longer than than the maximum cache idle time, the entry will be removed. The update_interval
value will change when the client_retention_interval is changed. The update interval represents the interval between the cleaning
happens. If the value of client_retention_interval is set to 60hrs the connected client entry will stay there for 60 hours
and after that it will get removed. If the value of update_interval is 8 hours then the cache will be refreshed

once every 8 hours.

Example

Retrieves connected-client cache settings information

```
# The API:
GET /api/protocols/nfs/connected-client-settings

# The call:
curl -X GET "https://<cluster-mgmt-ip>/api/protocols/nfs/connected-client-
settings?return_timeout=15&return_records=true" -H "accept:
application/json"

# The response:
{
"client_retention_interval": "P7D",
"update_interval": "PT8H"
}
```

Updating connected-client cache settings

```
# The API:
PATCH /api/protocols/nfs/connected-client-settings

# The call:
curl -d "@test_cache_settings_patch.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/connected-client-settings"
test_cache_settings_patch.txt(body):
{
"client_retention_interval": "P7D"
}
```

Retrieve the NFS connected-client cache settings for a cluster

GET `/protocols/nfs/connected-client-settings`

Introduced In: 9.12

Retrieves the NFS connected-client cache settings of the cluster.

Parameters

Name	Type	In	Required	Description
client_retention_interval	string	query	False	Filter by client_retention_interval
update_interval	string	query	False	Filter by update_interval
enable_nfs_clients_deletion	boolean	query	False	Filter by enable_nfs_clients_deletion
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
client_retention_interval	string	The lifetime range of the connected-clients cache. Only intervals in multiples of 12 hours or its equivalent in days, minutes or seconds are supported. The minimum is 12 hours and the maximum is 168 hours or 7 days.
enable_nfs_clients_deletion	boolean	Specifies whether or not NFS Clients deletion is enabled for the connected-clients cache. When set to "true", connected-clients entries are deleted when a connection is closed.
update_interval	string	The time interval between refreshing the connected-clients cache. The minimum is 1 hour and the maximum is 8 hours.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "client_retention_interval": "string",
  "update_interval": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update NFS connected-client cache settings properties

PATCH `/protocols/nfs/connected-client-settings`

Introduced In: 9.12

Updates the properties of the NFS connected-client cache settings.

Request Body

Name	Type	Description
client_retention_interval	string	The lifetime range of the connected-clients cache. Only intervals in multiples of 12 hours or its equivalent in days, minutes or seconds are supported. The minimum is 12 hours and the maximum is 168 hours or 7 days.
enable_nfs_clients_deletion	boolean	Specifies whether or not NFS Clients deletion is enabled for the connected-clients cache. When set to "true", connected-clients entries are deleted when a connection is closed.
update_interval	string	The time interval between refreshing the connected-clients cache. The minimum is 1 hour and the maximum is 8 hours.

Example request

```
{
  "client_retention_interval": "string",
  "update_interval": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3277172	The value for "client_retention_interval" must be between 12 and 168 hours or its equivalent in days, minutes or seconds.

Error Code	Description
3277170	The "client_retention_interval" must be set to a value which is a multiple of 12 hours or to its equivalent in days, minutes or seconds.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

nfs_clients_cache

Name	Type	Description
client_retention_interval	string	The lifetime range of the connected-clients cache. Only intervals in multiples of 12 hours or its equivalent in days, minutes or seconds are supported. The minimum is 12 hours and the maximum is 168 hours or 7 days.
enable_nfs_clients_deletion	boolean	Specifies whether or not NFS Clients deletion is enabled for the connected-clients cache. When set to "true", connected-clients entries are deleted when a connection is closed.
update_interval	string	The time interval between refreshing the connected-clients cache. The minimum is 1 hour and the maximum is 8 hours.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View NFS connected clients

Protocols NFS connected-clients endpoint overview

Overview

ONTAP connected clients show functionality is mainly used to provide a list of currently connected NFS clients. It also provides a potential list of other NFS clients that can be connected but are currently idle and a list of recently unmounted clients. If a client connected to the NFS server is idle for longer than the maximum cache idle time, then the entry will be removed. By default, the maximum cache idle time is 48 hours.

The following are details of the fields retrieved for the Connected Clients GET API:

node.name: The node name hosting this record; basically the node hosting the "server_ip".
node.uuid: The node UUID hosting this record; basically the node hosting the "server_ip".
svm.name: The svm name to which the "server_ip" belongs to.
svm.uuid: The svm uuid to which the "server_ip" belongs to.
server_ip: All clients that are connected to this interface are displayed in rows.
client_ip: The IP address of the client that is connected to the interface.
volume.name: The name of the volume the client is accessing.
volume.uuid: The UUID of the volume the client is accessing. This field is expensive field and will be fetched in advance privilege level.
protocol: The NFS protocol version over which client is accessing the volume.
export_policy.id: The export policy ID associated with the volume.
export_policy.name: The export policy name associated with the volume.
idle_duration: The time elapsed since the last request was sent by the client for this volume.
local_request_count: A counter that tracks requests that are sent to the volume with fast-path to local node.
remote_request_count: A counter that tracks requests that are sent to the volume with slow-path to remote node.
trunking_enabled: Flag that indicates the trunking status for the specified SVM connection. True indicates that the trunking feature is enabled while false indicates that the trunking feature is disabled.

Related CLI command

The CLI command for ONTAP connected clients is: "nfs connected-clients show"
cluster-1::*> nfs connected-clients show
Node: node1
Vserver: vs1
Data-Ip: xxx.xxx.xxx.xxx
Local Remote
Client-Ip Protocol Volume Policy Idle-Time Reqs Reqs Trunking
---------- ------ ------ ------ -------- ---- ---- ----

xxx.xxx.xxx.xxx nfs4.1 root_vol pol1 6s 9 0 false
xxx.xxx.xxx.xxx nfs3 vol1 pol1 56s 7 0 false
xxx.xxx.xxx.xxx nfs4.1 vol1 pol1 6s 7 0 false
3 entries were displayed.

Example

Retrieves connected client information

```
# The API:
GET /protocols/nfs/connected-clients

# The call:
curl -X GET "https://<cluster-mgmt-ip>/api/protocols/nfs/connected-
clients?return_timeout=15&return_records=true" -H "accept:
application/json"

# The response:
{
"records": [
{
   "svm": {
     "uuid": "c642db55-b8d0-11e9-9ad1-0050568e8480",
     "name": "vs1"
   },
   "node": {
     "uuid": "cc282893-b82f-11e9-a3ad-0050568e8480",
     "name": "vsim1"
   },
   "server_ip": "10.140.72.214",
   "client_ip": "10.140.137.57",
   "volume": {
     "name": "rvol1",
     "uuid": "c6bbc6f2-b8d0-11e9-9ad1-0050568e8480"
   },
   "protocol": "nfs4"
 },
 {
   "svm": {
     "uuid": "c642db55-b8d0-11e9-9ad1-0050568e8480",
     "name": "vs1"
   },
   "node": {
     "uuid": "cc282893-b82f-11e9-a3ad-0050568e8480",
     "name": "vsim1"
   },
   "server_ip": "10.140.72.214",
```

```
    "client_ip": "10.140.137.57",
    "volume": {
      "name": "vol1",
      "uuid": "d28d1999-b8d0-11e9-9ad1-0050568e8480"
    },
    "protocol": "nfs3"
  },
  {
    "svm": {
      "uuid": "c642db55-b8d0-11e9-9ad1-0050568e8480",
      "name": "vs1"
    },
    "node": {
      "uuid": "cc282893-b82f-11e9-a3ad-0050568e8480",
      "name": "vsim1"
    },
    "server_ip": "10.140.72.214",
    "client_ip": "10.140.137.57",
    "volume": {
      "name": "vol1",
      "uuid": "d28d1999-b8d0-11e9-9ad1-0050568e8480"
    },
    "protocol": "nfs4"
  }],
  "num_records": 3
}
```


Retrieve the NFS configuration for an SVM

GET `/protocols/nfs/connected-clients`

Introduced In: 9.7

Retrieves the NFS configuration of SVMs.

Expensive properties

export_policy.id is expensive field. It is not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `export_policy.id`

Parameters

Name	Type	In	Required	Description
node.uuid	string	query	False	Filter by node.uuid

Name	Type	In	Required	Description
node.name	string	query	False	Filter by node.name
local_request_count	integer	query	False	Filter by local_request_count
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
server_ip	string	query	False	Filter by server_ip
remote_request_count	integer	query	False	Filter by remote_request_count
client_ip	string	query	False	Filter by client_ip
idle_duration	string	query	False	Filter by idle_duration
export_policy.id	integer	query	False	Filter by export_policy.id • Introduced in: 9.9
export_policy.name	string	query	False	Filter by export_policy.name • Introduced in: 9.9
trunking_enabled	boolean	query	False	Filter by trunking_enabled • Introduced in: 9.12
protocol	string	query	False	Filter by protocol
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[nfs_clients]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "client_ip": "string",
      "export_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 100,
        "name": "default"
      },
      "idle_duration": "P4DT84H30M5S",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "protocol": "nfs3",
      "server_ip": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917887	The first character of the volume name must be a letter or underscore.
917888	Invalid character in volume name. It can have '_' and alphanumeric characters.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

export_policy

Export Policy

Name	Type	Description
_links	_links	
id	integer	
name	string	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

nfs_clients

Name	Type	Description
_links	_links	
client_ip	string	Specifies IP address of the client.
export_policy	export_policy	Export Policy
idle_duration	string	Specifies an ISO-8601 format of date and time to retrieve the idle time duration in hours, minutes, and seconds format.
local_request_count	integer	A counter that tracks requests that are sent to the volume with fast-path to local node.
node	node	

Name	Type	Description
protocol	string	The NFS protocol version over which client is accessing the volume. The following values are supported: • nfs - All NFS versions are considered • nfs3 - NFS version 3 protocol • nfs4 - NFS version 4 protocol • nfs4.1 - NFS version 4 minor version 1 protocol • nfs4.2 - NFS version 4 minor version 2 protocol
remote_request_count	integer	A counter that tracks requests that are sent to the volume with slow-path to remote node.
server_ip	string	Specifies the IP address of the server.
svm	svm	SVM, applies only to SVM-scoped objects.
trunking_enabled	boolean	Flag that indicates the trunking status for the specified SVM connection. True indicates that the trunking feature is enabled while false indicates that the trunking feature is disabled.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NFS export policies

Protocols NFS export-policies endpoint overview

Export Policies

1) Retrieve the export policy details

NOTE: This is used to read in the whole policy.

```
# The API:
GET /api/protocols/nfs/export-policies

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/export-policies"
```

2) Create an export policy for an SVM

```
# The API:
POST /api/protocols/nfs/export-policies

# The call:
curl -d "@test_post_policy_single_rule.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/export-policies"
test_post_policy_single_rule.txt(body):
{
"name": "P1",
"rules":[
  {
    "clients": [
      {
```

```
        "match": "host1"
      }
    ],
    "ro_rule": [
      "krb5"
    ],
    "rw_rule": [
      "ntlm"
    ],
    "anonymous_user": "anon1",
    "chown_mode": "restricted",
    "allow_suid": true
  },
  {
    "clients": [
      {
        "match": "host2"
      }
    ],
    "ro_rule": [
      "sys"
    ],
    "rw_rule": [
      "ntlm"
    ],
    "superuser": [
      "any"
    ],
    "allow_device_creation": true,
    "ntfs_unix_security": "fail"
  }
]
}
```


---

3) Update an export policy for an SVM

NOTE: This is used to either update the policy name or update all of the rules at once in an existing export policy.

```
# The API:
PATCH /api/protocols/nfs/export-policies/{policy.id}

# The call:
curl -d "@test_patch_policy.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/export-policies/8589934594"
test_patch_policy.txt(body):
{
"name": "S1",
"rules":[
  {
    "clients": [
      {
        "match": "host4"
      }
    ],
    "ro_rule": [
      "krb5"
    ],
    "rw_rule": [
      "ntlm"
    ]
  }
]
}
```

4) Delete an export policy for an SVM

```
# The API:
DELETE /api/protocols/nfs/export-policies/{policy.id}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/nfs/export-
policies/8589934594"
```

Export Rules

1) Retrieve the export policy rule details for an export policy

```
# The API:
GET /api/protocols/nfs/export-policies/{policy.id}/rules

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/export-
policies/8589934595/rules"
```

2) Create an export policy rule for an export policy

NOTE: This is used to add a single new rule to an existing export policy.

```
# The API:
POST /api/protocols/nfs/export-policies/{policy.id}/rules

# The call:
curl -d "@test_patch_export_rule.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/export-policies/8589934595/rules"
test_patch_export_rule.txt(body):
{
"clients": [
  {
    "match": "host2"
  }
],
"ro_rule": [
  "sys"
],
"rw_rule": [
  "ntlm"
]
}
```

3) Update an export policy rule for an export policy

NOTE: This is used to edit an existing single rule in an existing export policy.

```
# The API:
PATCH /api/protocols/nfs/export-policies/{policy.id}/rules/{index}

# The call:
curl -d "@test_patch_export_rule.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/export-policies/8589934595/rules/5?new_index=10"
test_patch_export_rule.txt(body):
{
"clients": [
  {
    "match": "host4"
  }
],
"ro_rule": [
  "sys"
],
"rw_rule": [
  "krb5"
]
}
```

---

4) Delete an export policy rule for an export policy

```
# The API:
DELETE /api/protocols/nfs/export-policies/{policy.id}/rules/{index}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/nfs/export-
policies/8589934595/rules/15"
```

Export Clients

1) Retrieve the export client matches of an export policy rule

---

```
# The API:
GET /api/protocols/nfs/export-policies/{policy.id}/rules/{index}/clients

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/export-
policies/8589934593/rules/2/clients"
```

---

2) Add an export client match to an export policy rule

```
# The API:
POST /api/protocols/nfs/export-policies/{policy.id}/rules/{index}/clients

# The call:
curl -d "@add_client_match.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/export-policies/8589934593/rules/1/clients"
add_client_match.txt(body):
{
"match" : "host4"
}
```

---

3) Delete an export client match from an export policy rule

```
# The API:
DELETE /api/protocols/nfs/export-
policies/{policy.id}/rules/{index}/clients/{match}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/nfs/export-
policies/8589934593/rules/1/clients/host1,host2"
```

Retrieve export policies

GET `/protocols/nfs/export-policies`

Introduced In: 9.6

Retrieves export policies.

Related ONTAP commands

- `vserver export-policy show`
- `vserver export-policy rule show`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
id	integer	query	False	Filter by id
rules.chown_mode	string	query	False	Filter by rules.chown_mode • Introduced in: 9.9
rules.ntfs_unix_security	string	query	False	Filter by rules.ntfs_unix_security • Introduced in: 9.9
rules.clients.match	string	query	False	Filter by rules.clients.match
rules.index	integer	query	False	Filter by rules.index
rules.superuser	string	query	False	Filter by rules.superuser
rules.rw_rule	string	query	False	Filter by rules.rw_rule
rules.allow_device_creation	boolean	query	False	Filter by rules.allow_device_creation • Introduced in: 9.9

Name	Type	In	Required	Description
rules.anonymous_user	string	query	False	Filter by rules.anonymous_user
rules.ro_rule	string	query	False	Filter by rules.ro_rule
rules.allow_suid	boolean	query	False	Filter by rules.allow_suid • Introduced in: 9.9
rules.protocols	string	query	False	Filter by rules.protocols
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
name	string	query	False	Filter by name • maxLength: 256
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of export policy records
records	array[export_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 0,
      "name": "string",
      "rules": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "anonymous_user": "string",
          "chown_mode": "string",
          "clients": [
            {
              "match": "0.0.0.0/0"
            }
          ],
          "ntfs_unix_security": "string",
          "protocols": [
            "string"
          ],
          "ro_rule": [
            "string"
          ],
          "rw_rule": [
            "string"
          ],
          "superuser": [
```

```
            "string"
          ]
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262197	The value provided is invalid for the field
2621462	The specified SVM name does not exist
2621519	SVM name is invalid. The SVM name must begin with a letter or an underscore. If the SVM is of type "sync-source", the maximum supported length is 41. Otherwise, the maximum supported length is 47
2621643	The specified SVM name is too long
2621685	SVM name length cannot be zero
2621706	The specified SVM UUID is incorrect for the specified SVM name
6691623	User is not authorized

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.

Name	Type	Description
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_policy

Name	Type	Description
_links	_links	
id	integer	Export Policy ID
name	string	Export Policy Name

Name	Type	Description
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an export policy

POST `/protocols/nfs/export-policies`

Introduced In: 9.6

Creates an export policy. An SVM can have any number of export policies to define rules for which clients can access data exported by the SVM. A policy with no rules prohibits access.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create an export policy.
- `name` - Name of the export policy.

Recommended optional properties

- `rules` - Rule(s) of an export policy. Used to create the export rule and populate the export policy with export rules in a single request.
- `rules[].index` - If you specify an index number that already matches a rule, the index number of the existing rule is incremented, as are the index numbers of all subsequent rules, either to the end of the list

or to an open space in the list. If you do not specify an index number, the new rule is placed at the end of the policy's list.

Related ONTAP commands

- `vserver export-policy create`
- `vserver export-policy rule create`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
id	integer	Export Policy ID
name	string	Export Policy Name
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "id": 0,
  "name": "string",
  "rules": [
    {
      "anonymous_user": "string",
      "chown_mode": "string",
      "clients": [
        {
          "match": "0.0.0.0/0"
        }
      ],
      "ntfs_unix_security": "string",
      "protocols": [
        "string"
      ],
      "ro_rule": [
        "string"
      ],
      "rw_rule": [
        "string"
      ],
      "superuser": [
        "string"
      ]
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of export policy records

Name	Type	Description
records	array[export_policy]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "id": 0,
      "name": "string",
      "rules": [
        {
          "anonymous_user": "string",
          "chown_mode": "string",
          "clients": [
            {
              "match": "0.0.0.0/0"
            }
          ],
          "ntfs_unix_security": "string",
          "protocols": [
            "string"
          ],
          "ro_rule": [
            "string"
          ],
          "rw_rule": [
            "string"
          ],
          "superuser": [
            "string"
          ]
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703952	Invalid ruleset name provided. No spaces allowed in a ruleset name
1703954	Export policy does not exist
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704047	The export policy name cannot be longer than 256 characters
1704049	Invalid clientmatch: clientmatch lists require an effective cluster version of Data ONTAP 9.0 or later. Upgrade all nodes to Data ONTAP 9.0 or above to use features that operate on lists of clientmatch strings in export-policy rules
1704050	Invalid clientmatch: clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"

Error Code	Description
1704055	Export policies are only supported for data Vservers
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
1704071	The export policy was not created because of duplicate export policy rules present in the request
2621462	The specified SVM name does not exist
2621519	SVM name is invalid. The SVM name must begin with a letter or an underscore. If the SVM is of type "sync-source", the maximum supported length is 41. Otherwise, the maximum supported length is 47
2621643	The specified SVM name is too long
2621685	SVM name length cannot be zero
2621706	The specified SVM UUID is incorrect for the specified SVM name
3277000	Upgrade all nodes to ONTAP 9.0.0 or above to use krb5p as a security flavor in export-policy rules
3277083	User ID is not valid. Enter a value for User ID from 0 to 4294967295
3277149	The "Anon" field cannot be an empty string
6691623	User is not authorized

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_policy

Name	Type	Description
id	integer	Export Policy ID
name	string	Export Policy Name
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an export policy

DELETE `/protocols/nfs/export-policies/{id}`

Introduced In: 9.6

Deletes an export policy.

Related ONTAP commands

- `vserver export-policy delete`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Export Policy ID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703944	Failed to delete rule
1703945	Ruleset is in use by a volume. It cannot be deleted until all volumes that refer to it are first deleted
1703946	Cannot determine if the ruleset is in use by a volume. It cannot be deleted until all volumes that refer to it are first deleted
1703947	Cannot delete default ruleset. This ruleset will be deleted when the owning Vserver is deleted
1703952	Invalid ruleset name provided. No spaces are allowed in a ruleset name
1703953	This ruleset is in use by a qtree export policy. It cannot be deleted until all qtree policies that refer to it are first deleted
1704047	The export policy name cannot be longer than 256 characters

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an export policy

GET `/protocols/nfs/export-policies/{id}`

Introduced In: 9.6

Retrieves an export policy.

Related ONTAP commands

- `vserver export-policy show`
- `vserver export-policy rule show`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Export Policy ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
id	integer	Export Policy ID
name	string	Export Policy Name
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "id": 0,
  "name": "string",
  "rules": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anonymous_user": "string",
      "chown_mode": "string",
      "clients": [
        {
          "match": "0.0.0.0/0"
        }
      ],
      "ntfs_unix_security": "string",
      "protocols": [
        "string"
      ],
      "ro_rule": [
        "string"
      ],
      "rw_rule": [
        "string"
      ],
      "superuser": [
        "string"
      ]
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
```

```
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update export policy properties

PATCH `/protocols/nfs/export-policies/{id}`

Introduced In: 9.6

Updates the properties of an export policy to change an export policy name or replace all export policy rules.

Related ONTAP commands

- `vserver export-policy rename`
- `vserver export-policy rule delete`
- `vserver export-policy rule create`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Export Policy ID

Request Body

Name	Type	Description
id	integer	Export Policy ID
name	string	Export Policy Name
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "id": 0,
  "name": "string",
  "rules": [
    {
      "anonymous_user": "string",
      "chown_mode": "string",
      "clients": [
        {
          "match": "0.0.0.0/0"
        }
      ],
      "ntfs_unix_security": "string",
      "protocols": [
        "string"
      ],
      "ro_rule": [
        "string"
      ],
      "rw_rule": [
        "string"
      ],
      "superuser": [
        "string"
      ]
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703950	Failed to rename ruleset
1703952	Invalid ruleset name provided. No spaces are allowed in a ruleset name
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704047	The export policy name cannot be longer than 256 characters
1704050	Invalid clientmatch: clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
3277000	Upgrade all nodes to ONTAP 9.0.0 or above to use krb5p as a security flavor in export-policy rules
3277083	User ID is not valid. Enter a value for User ID from 0 to 4294967295
3277149	The "Anon" field cannot be an empty string

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

export_rules

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_policy

Name	Type	Description
id	integer	Export Policy ID
name	string	Export Policy Name
rules	array[export_rules]	Rules of the Export Policy.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve export policy rules

GET `/protocols/nfs/export-policies/{policy.id}/rules`

Introduced In: 9.6

Retrieves export policy rules.

Related ONTAP commands

- `vserver export-policy rule show`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
ntfs_unix_security	string	query	False	Filter by ntfs_unix_security • Introduced in: 9.9
clients.match	string	query	False	Filter by clients.match
chown_mode	string	query	False	Filter by chown_mode • Introduced in: 9.9
index	integer	query	False	Filter by index
rw_rule	string	query	False	Filter by rw_rule
superuser	string	query	False	Filter by superuser
ro_rule	string	query	False	Filter by ro_rule
allow_device_creation	boolean	query	False	Filter by allow_device_creation • Introduced in: 9.9
anonymous_user	string	query	False	Filter by anonymous_user
protocols	string	query	False	Filter by protocols
allow_suid	boolean	query	False	Filter by allow_suid • Introduced in: 9.9

Name	Type	In	Required	Description
policy.name	string	query	False	Filter by policy.name • Introduced in: 9.10
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.10
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.10
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Export Rule records
records	array[export_rule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anonymous_user": "string",
      "chown_mode": "string",
      "clients": [
        {
          "match": "0.0.0.0/0"
        }
      ],
      "ntfs_unix_security": "string",
      "policy": {
        "name": "string"
      },
      "protocols": [
        "string"
      ],
      "ro_rule": [
        "string"
      ],
      "rw_rule": [
        "string"
      ],
      "superuser": [
        "string"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262194	The expression is missing a value
262197	The value provided is invalid for the field
2621462	The specified SVM name does not exist
2621519	SVM name is invalid. The SVM name must begin with a letter or an underscore. If the SVM is of type "sync-source", the maximum supported length is 41. Otherwise, the maximum supported length is 47
2621643	The specified SVM name is too long
2621685	SVM name length cannot be zero
2621706	The specified SVM UUID is incorrect for the specified SVM name
6691623	User is not authorized

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

policy

Name	Type	Description
id	integer	Export policy ID
name	string	Export policy name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_rule

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
policy	policy	
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an export policy rule

POST `/protocols/nfs/export-policies/{policy.id}/rules`

Introduced In: 9.6

Creates an export policy rule.

Required properties

- `policy.id` - Existing export policy for which to create an export rule.
- `clients.match` - List of clients (hostnames, ipaddresses, netgroups, domains) to which the export rule applies.
- `ro_rule` - Used to specify the security type for read-only access to volumes that use the export rule.
- `rw_rule` - Used to specify the security type for read-write access to volumes that use the export rule.

Optional property

- `index` - Used to specify the index number of the export rule that you want to create. If you specify an index number that already matches a rule, the index number of the existing rule is incremented, as are the index numbers of all subsequent rules, either to the end of the list or to an open space in the list. If you do not

specify an index number, the new rule is placed at the end of the policy's list.

Default property values

If not specified in POST, the following default property values are assigned:

- `protocols` - *any*
- `anonymous_user` - *none*
- `superuser` - *any*
- `allow_device_creation` - *true*
- `ntfs_unix_security` - *fail*
- `chown_mode` - *restricted*
- `allow_suid` - *true*

Related ONTAP commands

- `vserver export-policy rule create`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.

Name	Type	Description
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
policy	policy	
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "anonymous_user": "string",
  "chown_mode": "string",
  "clients": [
    {
      "match": "0.0.0.0/0"
    }
  ],
  "ntfs_unix_security": "string",
  "policy": {
    "name": "string"
  },
  "protocols": [
    "string"
  ],
  "ro_rule": [
    "string"
  ],
  "rw_rule": [
    "string"
  ],
  "superuser": [
    "string"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of Export Rule records
records	array[export_rule]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "anonymous_user": "string",
      "chown_mode": "string",
      "clients": [
        {
          "match": "0.0.0.0/0"
        }
      ],
      "ntfs_unix_security": "string",
      "policy": {
        "name": "string"
      },
      "protocols": [
        "string"
      ],
      "ro_rule": [
        "string"
      ],
      "rw_rule": [
        "string"
      ],
      "superuser": [
        "string"
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703954	Export policy does not exist
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704050	Invalid clientmatch: clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
1704070	Export policy rule already exists. The export policy rule was not created because an export policy rule with the same values already exists.
3277000	Upgrade all nodes to ONTAP 9.0.0 or above to use krb5p as a security flavor in export-policy rules
3277083	User ID is not valid. Enter a value for User ID from 0 to 4294967295
3277162	The specified "index", 0, is invalid. Valid values are values from 1 to 4294967295
3277163	The system cannot automatically specify an "index" for this rule, because a rule with "index" 4294967295 exists. Either specify an unused "index", or update the existing rules so that "index" 4294967295 is not used.

Error Code	Description
3277149	The "Anon" field cannot be an empty string

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

policy

Name	Type	Description
id	integer	Export policy ID
name	string	Export policy name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_rule

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
policy	policy	
protocols	array[string]	

Name	Type	Description
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an export policy rule

DELETE `/protocols/nfs/export-policies/{policy.id}/rules/{index}`

Introduced In: 9.6

Deletes an export policy rule.

Related ONTAP commands

- `vserver export-policy rule delete`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703945	Ruleset is in use by a volume. It cannot be deleted until all volumes that refer to it are first deleted
1703946	Cannot determine if the ruleset is in use by a volume. It cannot be deleted until all volumes that refer to it are first deleted
1703954	Export policy does not exist

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an export policy rule

GET `/protocols/nfs/export-policies/{policy.id}/rules/{index}`

Introduced In: 9.6

Retrieves an export policy rule

Related ONTAP commands

- `vserver export-policy rule show`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.

Name	Type	Description
ntfs_unix_security	string	NTFS export UNIX security options.
policy	policy	
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "anonymous_user": "string",
  "chown_mode": "string",
  "clients": [
    {
      "match": "0.0.0.0/0"
    }
  ],
  "ntfs_unix_security": "string",
  "policy": {
    "name": "string"
  },
  "protocols": [
    "string"
  ],
  "ro_rule": [
    "string"
  ],
  "rw_rule": [
    "string"
  ],
  "superuser": [
    "string"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262197	The value provided is invalid for the field
6691623	User is not authorized

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

policy

Name	Type	Description
id	integer	Export policy ID
name	string	Export policy name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the properties of an export policy rule

PATCH `/protocols/nfs/export-policies/{policy.id}/rules/{index}`

Introduced In: 9.6

Updates the properties of an export policy rule to change an export policy rule's index or fields.

Related ONTAP commands

- `vserver export-policy rule modify`
- `vserver export-policy rule setindex`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index
new_index	integer	query	False	New Export Rule Index

Request Body

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.

Name	Type	Description
protocols	array[string]	
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "anonymous_user": "string",
  "chown_mode": "string",
  "clients": [
    {
      "match": "0.0.0.0/0"
    }
  ],
  "ntfs_unix_security": "string",
  "protocols": [
    "string"
  ],
  "ro_rule": [
    "string"
  ],
  "rw_rule": [
    "string"
  ],
  "superuser": [
    "string"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	Field 'svm.name' is not supported in the body of PATCH request
262197	The value provided is invalid for the field
262203	Field 'svm.uuid' is not supported in the body of PATCH request
1703954	Export policy does not exist
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704050	Invalid clientmatch: clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
3277000	Upgrade all nodes to ONTAP 9.0.0 or above to use krb5p as a security flavor in export-policy rules

Error Code	Description
3277083	User ID is not valid. Enter a value for User ID from 0 to 4294967295
3277149	The "Anon" field cannot be an empty string
6691623	User is not authorized

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_clients

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com

policy

Name	Type	Description
id	integer	Export policy ID
name	string	Export policy name

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_rule

Name	Type	Description
allow_device_creation	boolean	Specifies whether or not device creation is allowed.
allow_suid	boolean	Specifies whether or not SetUID bits in SETATTR Op is to be honored.
anonymous_user	string	User ID To Which Anonymous Users Are Mapped.
chown_mode	string	Specifies who is authorized to change the ownership mode of a file.
clients	array[export_clients]	Array of client matches
index	integer	Index of the rule within the export policy.
ntfs_unix_security	string	NTFS export UNIX security options.
protocols	array[string]	

Name	Type	Description
ro_rule	array[string]	Authentication flavors that the read-only access rule governs
rw_rule	array[string]	Authentication flavors that the read/write access rule governs
superuser	array[string]	Authentication flavors that the superuser security type governs
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve export policy rule clients

GET `/protocols/nfs/export-policies/{policy.id}/rules/{index}/clients`

Introduced In: 9.6

Retrieves export policy rule clients.

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of export rule client records
records	array[export_client]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "index": 0,
      "match": "0.0.0.0/0",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
6691623	User is not authorized

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

policy

Name	Type	Description
id	integer	Export policy ID

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_client

Name	Type	Description
index	integer	Index of the rule within the export policy.

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com
policy	policy	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an export policy rule client

POST `/protocols/nfs/export-policies/{policy.id}/rules/{index}/clients`

Introduced In: 9.6

Creates an export policy rule client

Required properties

- `policy.id` - Existing export policy that contains export policy rules for the client being added.
- `index` - Existing export policy rule for which to create an export client.
- `match` - Base name for the export policy client.

Related ONTAP commands

- `vserver export-policy rule add-clientmatches`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
index	integer	Index of the rule within the export policy.
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com
policy	policy	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "index": 0,
  "match": "0.0.0.0/0",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of export rule client records
records	array[export_client]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "index": 0,
      "match": "0.0.0.0/0",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	Field 'svm.name' is not supported in the body of POST request
1703954	Export policy does not exist
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704050	Invalid clientmatch: the clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
6691623	User is not authorized

Definitions

See Definitions

policy

Name	Type	Description
id	integer	Export policy ID

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

export_client

Name	Type	Description
index	integer	Index of the rule within the export policy.

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com
policy	policy	
svm	svm	SVM, applies only to SVM-scoped objects.

export_client

Name	Type	Description
index	integer	Index of the rule within the export policy.

Name	Type	Description
match	string	Client Match Hostname, IP Address, Netgroup, or Domain. You can specify the match as a string value in any of the following formats: • As a hostname; for instance, host1 • As an IPv4 address; for instance, 10.1.12.24 • As an IPv6 address; for instance, fd20:8b1e:b255:4071::100:1 • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a netgroup, with the netgroup name preceded by the @ character; for instance, @eng • As a domain name preceded by the . character; for instance, .example.com
policy	policy	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an export policy client

DELETE `/protocols/nfs/export-policies/{policy.id}/rules/{index}/clients/{match}`

Introduced In: 9.6

Deletes an export policy client

Related ONTAP commands

- `vserver export-policy rule remove-clientmatches`

Learn more

- DOC /protocols/nfs/export-policies

Parameters

Name	Type	In	Required	Description
policy.id	integer	path	True	Export Policy ID
index	integer	path	True	Export Rule Index
match	string	path	True	Export Client Match
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1703954	Export policy does not exist
1704036	Invalid clientmatch: missing domain name
1704037	Invalid clientmatch: missing network name
1704038	Invalid clientmatch: missing netgroup name
1704039	Invalid clientmatch
1704040	Invalid clientmatch: address bytes masked out by netmask are non-zero
1704041	Invalid clientmatch: address bytes masked to zero by netmask
1704042	Invalid clientmatch: too many bits in netmask
1704043	Invalid clientmatch: invalid netmask
1704044	Invalid clientmatch: invalid characters in host name
1704045	Invalid clientmatch: invalid characters in domain name
1704050	Invalid clientmatch: the clientmatch list contains a duplicate string. Duplicate strings in a clientmatch list are not supported
1704054	Invalid clientmatch: invalid characters in netgroup name. Valid characters for a netgroup name are 0-9, A-Z, a-z, ".", "_" and "-"
1704064	Clientmatch host name too long
1704065	Clientmatch domain name too long
6691623	User is not authorized

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update Kerberos interfaces

Protocols NFS Kerberos interfaces endpoint overview

Examples

Retrieving the Kerberos interface configuration details

```
# The API:
GET /api/protocols/nfs/kerberos/interfaces

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/kerberos/interfaces"
```

Updating the Kerberos interface configuration

```
# The API:
PATCH /api/protocols/nfs/kerberos/interfaces/{interface.uuid}

# The call:
curl -d "@test_patch_kerb_interface.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/kerberos/interfaces/e62936de-7342-11e8-9eb4-
0050568be2b7"
test_patch_kerb_interface.txt(body):
{
 "enabled" : "true",
 "spn": "nfs/datalif1-vsim3-d1.sim.netapp.com@NFS-NSR-W01.RTP.NETAPP.COM",
 "user" :"administrator",
 "password" :"Hello123!"
}
```

Retrieve Kerberos interfaces

GET `/protocols/nfs/kerberos/interfaces`

Introduced In: 9.6

Retrieves Kerberos interfaces.

Related ONTAP commands

- `vserver nfs kerberos interface show`

Learn more

- DOC /protocols/nfs/kerberos/interfaces

Parameters

Name	Type	In	Required	Description
spn	string	query	False	Filter by spn
encryption_types	string	query	False	Filter by encryption_types
machine_account	string	query	False	Filter by machine_account • Introduced in: 9.12
interface.name	string	query	False	Filter by interface.name
interface.ip.address	string	query	False	Filter by interface.ip.address
interface.uuid	string	query	False	Filter by interface.uuid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[kerberos_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "encryption_types": [
        "string"
      ],
      "force": true,
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "machine_account": "string",
      "spn": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
```

```
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

kerberos_interface

Name	Type	Description
_links	_links	
enabled	boolean	Specifies if Kerberos is enabled.
encryption_types	array[string]	
interface	interface	Network interface
machine_account	string	Specifies the machine account to create in Active Directory.
spn	string	Service principal name. Valid in PATCH.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a Kerberos interface

GET `/protocols/nfs/kerberos/interfaces/{interface.uuid}`

Introduced In: 9.6

Retrieves a Kerberos interface.

Related ONTAP commands

- `vserver nfs kerberos interface show`

Learn more

- DOC /protocols/nfs/kerberos/interfaces

Parameters

Name	Type	In	Required	Description
interface.uuid	string	path	True	Network interface UUID • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Specifies if Kerberos is enabled.
encryption_types	array[string]	
interface	interface	Network interface

Name	Type	Description
machine_account	string	Specifies the machine account to create in Active Directory.
spn	string	Service principal name. Valid in PATCH.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "encryption_types": [
    "string"
  ],
  "force": true,
  "interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "machine_account": "string",
  "spn": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update Kerberos interface properties

PATCH `/protocols/nfs/kerberos/interfaces/{interface.uuid}`

Introduced In: 9.6

Updates the properties of a Kerberos interface.

Optional property

- `force` - Specifies whether the server should ignore any error encountered while deleting the corresponding machine account on the KDC and also disables Kerberos on the LIF. This is applicable only when disabling Kerberos.

Related ONTAP commands

- `vserver nfs kerberos interface modify`
- `vserver nfs kerberos interface enable`
- `vserver nfs kerberos interface disable`

Learn more

- DOC /protocols/nfs/kerberos/interfaces

Parameters

Name	Type	In	Required	Description
interface.uuid	string	path	True	Network interface UUID • Introduced in: 9.7

Request Body

Name	Type	Description
enabled	boolean	Specifies if Kerberos is enabled.
encryption_types	array[string]	
force	boolean	Specifies whether the server should ignore any error encountered while deleting the corresponding machine account on the KDC and also disables Kerberos on the LIF.
interface	interface	Network interface
keytab_uri	string	Load keytab from URI
machine_account	string	Specifies the machine account to create in Active Directory.
organizational_unit	string	Organizational unit
password	string	Account creation password
spn	string	Service principal name. Valid in PATCH.
svm	svm	SVM, applies only to SVM-scoped objects.
user	string	Account creation user name

Example request

```
{
  "encryption_types": [
    "string"
  ],
  "interface": {
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "keytab_uri": "string",
  "machine_account": "string",
  "organizational_unit": "string",
  "password": "string",
  "spn": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "user": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
4	The entry doesn't exist
3276801	Failed to bind service principal name on LIF.
3276809	Failed to disable NFS Kerberos on LIF.
3276832	Failed to insert Kerberos attributes to database.
3276842	Internal error. Failed to import Kerberos keytab file into the management databases. Contact technical support for assistance.
3276861	Kerberos is already enabled/disabled on this LIF.

Error codes	Description
3276862	Kerberos service principal name is required.
3276889	Failed to enable NFS Kerberos on LIF.
3276937	Failed to lookup the Vserver for the virtual interface.
3276941	Kerberos is a required field.
3276942	Service principal name is invalid. It must of the format:"nfs/<LIF-FQDN>@REALM"</LIF-FQDN>
3276943	Lookup of Kerberos realm failed. The entry doesn’t exist.
3276944	Internal error. Reason: Failed to initialize the Kerberos context
3276945	Internal error. Reason: Failed to parse the service principal name
3276951	Warning: Skipping unsupported encryption type for service principal name
3276952	"organizational_unit" option cannot be used for "Other" vendor.
3276965	Account sharing across Vservers is not allowed. Use a different service principal name unique within the first 15 characters.
3277019	Cannot specify -force when enabling Kerberos.
3277020	Modifying the NFS Kerberos configuration for a LIF that is not configured for NFS is not supported.
3277043	Keytab import failed due to missing keys. Keys for encryption types are required for Vserver but found no matching keys for service principal name. Generate the keytab file with all required keys and try again.
3277133	The *machine_account* property can only be specified when the KDC vendor is Microsoft.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip

IP information

interface

Network interface

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

kerberos_interface

Name	Type	Description
enabled	boolean	Specifies if Kerberos is enabled.

Name	Type	Description
encryption_types	array[string]	
force	boolean	Specifies whether the server should ignore any error encountered while deleting the corresponding machine account on the KDC and also disables Kerberos on the LIF.
interface	interface	Network interface
keytab_uri	string	Load keytab from URI
machine_account	string	Specifies the machine account to create in Active Directory.
organizational_unit	string	Organizational unit
password	string	Account creation password
spn	string	Service principal name. Valid in PATCH.
svm	svm	SVM, applies only to SVM-scoped objects.
user	string	Account creation user name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage Kerberos realms

Protocols NFS Kerberos realms endpoint overview

Examples

Retrieving the Kerberos realm details

```
# The API:
GET /api/protocols/nfs/kerberos/realms

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/kerberos/realms"
```

Creating the Kerberos realm for an SVM

```
# The API:
POST /api/protocols/nfs/kerberos/realms

# The call:
curl -d "@test_post_kerb_realm.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/kerberos/realms"
test_post_kerb_realm.txt(body):
{
"svm.uuid": "05c90dc2-7343-11e8-9eb4-0050568be2b7",
"name": "NFS-NSR-W02.RTP.NETAPP.COM",
  "kdc": {
    "vendor": "microsoft",
    "ip": "10.225.185.112",
    "port": 88
  },
  "comment": "realm",
  "ad_server": {
    "name": "nfs-nsr-w02.rtp.netapp.com",
    "address": "10.225.185.112"
  }
}
```

Updating the Kerberos realm for an SVM

```
# The API:
PATCH /api/protocols/nfs/kerberos/realms/{svm.uuid}/{name}

# The call:
curl -d "@test_patch_kerb_realm.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/kerberos/realms/05c90dc2-7343-11e8-9eb4-
0050568be2b7/NFS-NSR-W02.RTP.NETAPP.COM"
test_patch_kerb_realm.txt(body):
{
"kdc": {
  "vendor": "Microsoft",
  "ip": "100.225.185.112",
  "port": 88
},
"comment": "realm modify",
"ad_server": {
  "name": "nfs.netapp.com",
  "address": "192.2.18.112"
}
}
```

Deleting the Kerberos realm for an SVM

```
# The API:
DELETE /api/protocols/nfs/kerberos/realms/{svm.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/protocols/nfs/kerberos/realms/05c90dc2-7343-11e8-9eb4-
0050568be2b7/NFS-NSR-W02.RTP.NETAPP.COM"
```

Retrieve Kerberos realms

GET `/protocols/nfs/kerberos/realms`

Introduced In: 9.6

Retrieves Kerberos realms.

Related ONTAP commands

- `vserver nfs kerberos realm show`

Learn more

- DOC /protocols/nfs/kerberos/realms

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
password_server.address	string	query	False	Filter by password_server.address • Introduced in: 9.13
password_server.port	integer	query	False	Filter by password_server.port • Introduced in: 9.13
kdc.vendor	string	query	False	Filter by kdc.vendor
kdc.ip	string	query	False	Filter by kdc.ip
kdc.port	integer	query	False	Filter by kdc.port • Max value: 65535 • Min value: 1
ad_server.name	string	query	False	Filter by ad_server.name
ad_server.address	string	query	False	Filter by ad_server.address
name	string	query	False	Filter by name
comment	string	query	False	Filter by comment

Name	Type	In	Required	Description
admin_server.address	string	query	False	Filter by admin_server.address • Introduced in: 9.13
admin_server.port	integer	query	False	Filter by admin_server.port • Introduced in: 9.13
clock_skew	integer	query	False	Filter by clock_skew • Introduced in: 9.13
encryption_types	string	query	False	Filter by encryption_types
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[kerberos_realm]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ad_server": {
        "address": "1.2.3.4",
        "name": "string"
      },
      "admin_server": {
        "address": "1.2.3.4"
      },
      "comment": "string",
      "encryption_types": [
        "string"
      ],
      "kdc": {
        "ip": "1.2.3.4",
        "port": 88,
        "vendor": "string"
      },
      "name": "string",
      "password_server": {
        "address": "1.2.3.4"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
```

```
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ad_server

Name	Type	Description
address	string	Active Directory server IP address
name	string	Active Directory server name

admin_server

Name	Type	Description
address	string	Admin server IP address.
port	integer	Specifies the port number of admin server.

kdc

Name	Type	Description
ip	string	KDC IP address
port	integer	KDC port

Name	Type	Description
vendor	string	Key Distribution Center (KDC) vendor. Following values are supported: • microsoft - Microsoft Active Directory KDC • other - MIT Kerberos KDC or other KDC

password_server

Name	Type	Description
address	string	Password server IP address.
port	integer	Specifies the port number of password server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

kerberos_realm

Name	Type	Description
_links	_links	
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment

Name	Type	Description
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a Kerberos realm

POST `/protocols/nfs/kerberos/realms`

Introduced In: 9.6

Creates a Kerberos realm.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM on which to create the Kerberos realm.
- `name` - Base name for the Kerberos realm.
- `kdc.vendor` - Vendor of the Key Distribution Center (KDC) server for this Kerberos realm. If the configuration uses a Microsoft Active Directory domain for authentication, this field nust be `microsoft`.

- `kdc.ip` - IP address of the KDC server for this Kerberos realm.

Recommended optional properties

- `ad_server.name` - Host name of the Active Directory Domain Controller (DC). This is a mandatory parameter if the kdc-vendor is `microsoft`.
- `ad_server.address` - IP address of the Active Directory Domain Controller (DC). This is a mandatory parameter if the kdc-vendor is `microsoft`.

Default property values

If not specified in POST, the following default property value is assigned:

- `kdc.port` - *88*
- `admin_server.port` - *749*
- `password_server.port` - *464*
- `clock_skew` - *5*

Related ONTAP commands

- `vserver nfs kerberos realm create`

Learn more

- DOC /protocols/nfs/kerberos/realms

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment

Name	Type	Description
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "ad_server": {
    "address": "1.2.3.4",
    "name": "string"
  },
  "admin_server": {
    "address": "1.2.3.4"
  },
  "comment": "string",
  "encryption_types": [
    "string"
  ],
  "kdc": {
    "ip": "1.2.3.4",
    "port": 88,
    "vendor": "string"
  },
  "name": "string",
  "password_server": {
    "address": "1.2.3.4"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
2949121	Active Directory server name required.
2949122	Active Directory server address required
2949123	Failed to create Kerberos realm.
2949124	Failed to create hosts file entry.
3276949	Kerberos realm creation failed. Reason: The parameters "ad_server.name" and "ad_server.address" are only valid when "kdc.vendor" is Microsoft
3276976	"realm" is a required input
3276998	Only the data Vservers can own NFS Kerberos realms.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ad_server

Name	Type	Description
address	string	Active Directory server IP address
name	string	Active Directory server name

admin_server

Name	Type	Description
address	string	Admin server IP address.
port	integer	Specifies the port number of admin server.

kdc

Name	Type	Description
ip	string	KDC IP address
port	integer	KDC port
vendor	string	Key Distribution Center (KDC) vendor. Following values are supported: • microsoft - Microsoft Active Directory KDC • other - MIT Kerberos KDC or other KDC

password_server

Name	Type	Description
address	string	Password server IP address.
port	integer	Specifies the port number of password server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

kerberos_realm

Name	Type	Description
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a Kerberos realm

DELETE `/protocols/nfs/kerberos/realms/{svm.uuid}/{name}`

Introduced In: 9.6

Deletes a Kerberos realm.

- `vserver nfs kerberos realm delete`

Learn more

- DOC /protocols/nfs/kerberos/realms

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
name	string	path	True	Kerberos realm

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
1966125	Failed to remove hosts entry.
1966126	Failed to lookup hosts entry.
2949141	Failed to lookup Kerberos realm.
2949142	Failed to remove Kerberos realm.
3276942	Service principal name is invalid. It must of the format:"nfs/<LIF-FQDN>@REALM\\\"</LIF-FQDN>
3276976	"realm" is a required input
3276998	Only the data Vservers can own NFS Kerberos realms.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a Kerberos realm

GET `/protocols/nfs/kerberos/realms/{svm.uuid}/{name}`

Introduced In: 9.6

Retrieves a Kerberos realm.

- `vserver nfs kerberos realm show`

Learn more

- DOC /protocols/nfs/kerberos/realms

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
name	string	path	True	Kerberos realm
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ad_server": {
    "address": "1.2.3.4",
    "name": "string"
  },
  "admin_server": {
    "address": "1.2.3.4"
  },
  "comment": "string",
  "encryption_types": [
    "string"
  ],
  "kdc": {
    "ip": "1.2.3.4",
    "port": 88,
    "vendor": "string"
  },
  "name": "string",
  "password_server": {
    "address": "1.2.3.4"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ad_server

Name	Type	Description
address	string	Active Directory server IP address
name	string	Active Directory server name

admin_server

Name	Type	Description
address	string	Admin server IP address.
port	integer	Specifies the port number of admin server.

kdc

Name	Type	Description
ip	string	KDC IP address
port	integer	KDC port
vendor	string	Key Distribution Center (KDC) vendor. Following values are supported: • microsoft - Microsoft Active Directory KDC • other - MIT Kerberos KDC or other KDC

password_server

Name	Type	Description
address	string	Password server IP address.
port	integer	Specifies the port number of password server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update Kerberos realm properties

PATCH `/protocols/nfs/kerberos/realms/{svm.uuid}/{name}`

Introduced In: 9.6

Updates the properties of a Kerberos realm.

- `vserver nfs kerberos realm modify`

Learn more

- DOC /protocols/nfs/kerberos/realms

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
name	string	path	True	Kerberos realm

Request Body

Name	Type	Description
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "ad_server": {
    "address": "1.2.3.4",
    "name": "string"
  },
  "admin_server": {
    "address": "1.2.3.4"
  },
  "comment": "string",
  "encryption_types": [
    "string"
  ],
  "kdc": {
    "ip": "1.2.3.4",
    "port": 88,
    "vendor": "string"
  },
  "name": "string",
  "password_server": {
    "address": "1.2.3.4"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
1966125	Failed to remove hosts entry.
1966126	Failed to lookup hosts entry.

Error codes	Description
1966131	Failed to create hosts entry.
1966132	Failed to modify hosts entry.
2949121	Active Directory server name required.
2949122	Active Directory server address required
2949123	Failed to create Kerberos realm.
2949124	Failed to create hosts file entry.
2949141	Failed to lookup Kerberos realm.
2949148	Failed to modify Kerberos realm.
3276976	"realm" is a required input
3276998	Only the data Vservers can own NFS Kerberos realms.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ad_server

Name	Type	Description
address	string	Active Directory server IP address
name	string	Active Directory server name

admin_server

Name	Type	Description
address	string	Admin server IP address.
port	integer	Specifies the port number of admin server.

kdc

Name	Type	Description
ip	string	KDC IP address
port	integer	KDC port
vendor	string	Key Distribution Center (KDC) vendor. Following values are supported: • microsoft - Microsoft Active Directory KDC • other - MIT Kerberos KDC or other KDC

password_server

Name	Type	Description
address	string	Password server IP address.
port	integer	Specifies the port number of password server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

kerberos_realm

Name	Type	Description
ad_server	ad_server	
admin_server	admin_server	
clock_skew	integer	Specifies the allowed time of clock-skew between the server and clients, in minutes.
comment	string	Comment
encryption_types	array[string]	
kdc	kdc	
name	string	Kerberos realm
password_server	password_server	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NFS services

Protocols NFS services endpoint overview

Retrieving an NFS configuration

```
# The API:
GET /api/protocols/nfs/services

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/services"
```

Retrieving the mount permissions for a specified volume for a given IP address.

```
# The API:
GET /api/protocols/nfs/services

# The call:
curl -X GET curl -X GET "https://<mgmt-
ip>/api/protocols/nfs/services?protocol_access_rules.volume=testvol12&prot
ocol_access_rules.client_ip=1.2.3.4&protocol_access_rules.auth_type=sys&sv
m.uuid=525928e9-9f84-11eb-a89f-
005056bb70a8&fields=*&return_timeout=15&return_records=true"

#
Returns the protocol_access_rules structure and provides access
permissions for each protocol.
"protocol_access_rules": {
  "nfs3_access_type": "read_write",
  "nfs4_access_type": "read",
  "cifs_access_type": "read_write"
}
```

Creating an NFS configuration for an SVM

```
# The API:
POST /api/protocols/nfs/services

# The call:
curl  -d "@test_nfs_post.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/services"
test_nfs_post.txt(body):
{
"svm": {
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"protocol": {
  "v4_id_domain": "nfs-nsr-w01.rtp.netapp.com"
},
"vstorage_enabled": "true"
}
```

Updating an NFS configuration for an SVM

```
# The API:
PATCH /api/protocols/nfs/services/{svm.uuid}

# The call:
curl -d "@test_nfs_patch.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/services/4a415601-548c-11e8-a21d-0050568bcbc9"
test_nfs_patch.txt(body):
{
"protocol": {
  "v4_id_domain": "nfs-nsr-w01.rtp.netapp.com"
},
"vstorage_enabled": "false"
}
```

Deleting an NFS configuration for an SVM

```
# The API:
DELETE /api/protocols/nfs/services/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/nfs/services/4a415601-
548c-11e8-a21d-0050568bcbc9"
```

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Retrieve the NFS configuration for SVMs

GET `/protocols/nfs/services`

Introduced In: 9.6

Retrieves the NFS configuration of SVMs.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Advanced properties

- security.rpcsec_context_idle
- security.ntfs_unix_security
- security.chown_mode
- security.nt_acl_display_permission
- protocol.v3_features.ejukebox_enabled
- protocol.v3_features.connection_drop
- protocol.v3_features.fsid_change
- protocol.v3_features.mount_daemon_port
- protocol.v3_features.network_lock_manager_port
- protocol.v3_features.network_status_monitor_port
- protocol.v3_features.rquota_daemon_port
- protocol.v3_features.hide_snapshot_enabled
- protocol.v41_features.implementation_domain
- protocol.v41_features.implementation_name
- protocol.v40_features.acl_max_aces
- windows.map_unknown_uid_to_default_user
- exports.netgroup_trust_any_nsswitch_no_match
- credential_cache.negative_ttl
- transport.tcp_max_transfer_size
- root.*
- protocol.v41_features.trunking_enabled
- protocol.v42_features.seclabel_enabled
- protocol.v42_features.sparsefile_ops_enabled
- protocol.v42_features.xattrs_enabled
- protocol.v40_features.referrals_enabled
- protocol.v41_features.referrals_enabled
- protocol.v4_lease_seconds
- protocol.v4_session_slots
- protocol.v4_session_slot_reply_cache_size
- protocol.v4_fsid_change

Diagnostic properties

- credential_cache.transient_error_ttl

- `access_cache_config.ttl_failure`

Related ONTAP commands

- `vserver nfs show`
- `vserver nfs status`
- `vserver export-policy check-access`

Learn more

- DOC /protocols/nfs/services

Parameters

Name	Type	In	Required	Description
protocol_access_rules.volume	string	query	False	Volume on which access needs to be checked. • Introduced in: 9.10
protocol_access_rules.client_ip	string	query	False	IP address for the client for which access needs to be checked. • Introduced in: 9.10
protocol_access_rules.auth_type	string	query	False	Authentication method used to check the client's access to the volume. • Introduced in: 9.10 • Default value: 1
rquota_enabled	boolean	query	False	Filter by rquota_enabled • Introduced in: 9.8
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
root.skip_write_permission_check	boolean	query	False	Filter by root.skip_write_permission_check • Introduced in: 9.11
root.ignore_nt_acl	boolean	query	False	Filter by root.ignore_nt_acl • Introduced in: 9.11
protocol.v4_lease_seconds	integer	query	False	Filter by protocol.v4_lease_seconds • Introduced in: 9.13
protocol.v3_64bit_identifiers_enabled	boolean	query	False	Filter by protocol.v3_64bit_identifiers_enabled • Introduced in: 9.8
protocol.v4_grace_seconds	integer	query	False	Filter by protocol.v4_grace_seconds • Introduced in: 9.13
protocol.v3_features.hide_snapshot_enabled	boolean	query	False	Filter by protocol.v3_features.hide_snapshot_enabled • Introduced in: 9.13

Name	Type	In	Required	Description
protocol.v3_features.fsid_change	boolean	query	False	Filter by protocol.v3_features.fsid_change • Introduced in: 9.11
protocol.v3_features.ejukebox_enabled	boolean	query	False	Filter by protocol.v3_features.ejukebox_enabled • Introduced in: 9.11
protocol.v3_features.mount_root_only	boolean	query	False	Filter by protocol.v3_features.mount_root_only • Introduced in: 9.11
protocol.v3_features.mount_daemon_port	integer	query	False	Filter by protocol.v3_features.mount_daemon_port • Introduced in: 9.11
protocol.v3_features.network_status_monitor_port	integer	query	False	Filter by protocol.v3_features.network_status_monitor_port • Introduced in: 9.11
protocol.v3_features.network_lock_manager_port	integer	query	False	Filter by protocol.v3_features.network_lock_manager_port • Introduced in: 9.11

Name	Type	In	Required	Description
protocol.v3_features.connection_drop	boolean	query	False	Filter by protocol.v3_features.connection_drop • Introduced in: 9.11
protocol.v3_features.rquota_daemon_port	integer	query	False	Filter by protocol.v3_features.rquota_daemon_port • Introduced in: 9.11
protocol.v41_enabled	boolean	query	False	Filter by protocol.v41_enabled
protocol.v4_id_domain	string	query	False	Filter by protocol.v4_id_domain
protocol.v4_fsid_change	boolean	query	False	Filter by protocol.v4_fsid_change • Introduced in: 9.13
protocol.v4_64bit_identifiers_enabled	boolean	query	False	Filter by protocol.v4_64bit_identifiers_enabled • Introduced in: 9.8
protocol.v41_features.implementation_domain	string	query	False	Filter by protocol.v41_features.implementation_domain • Introduced in: 9.11
protocol.v41_features.read_delegation_enabled	boolean	query	False	Filter by protocol.v41_features.read_delegation_enabled

Name	Type	In	Required	Description
protocol.v41_features.referrals_enabled	boolean	query	False	Filter by protocol.v41_features.referrals_enabled • Introduced in: 9.13
protocol.v41_features.pnfs_enabled	boolean	query	False	Filter by protocol.v41_features.pnfs_enabled
protocol.v41_features.acl_enabled	boolean	query	False	Filter by protocol.v41_features.acl_enabled
protocol.v41_features.implementation_name	string	query	False	Filter by protocol.v41_features.implementation_name • Introduced in: 9.11
protocol.v41_features.trunking_enabled	boolean	query	False	Filter by protocol.v41_features.trunking_enabled • Introduced in: 9.12
protocol.v41_features.write_delegation_enabled	boolean	query	False	Filter by protocol.v41_features.write_delegation_enabled
protocol.v40_features.referrals_enabled	boolean	query	False	Filter by protocol.v40_features.referrals_enabled • Introduced in: 9.13
protocol.v40_features.read_delegation_enabled	boolean	query	False	Filter by protocol.v40_features.read_delegation_enabled

Name	Type	In	Required	Description
protocol.v40_features.acl_enabled	boolean	query	False	Filter by protocol.v40_features.acl_enabled
protocol.v40_features.acl_preserve	boolean	query	False	Filter by protocol.v40_features.acl_preserve • Introduced in: 9.11
protocol.v40_features.write_delegation_enabled	boolean	query	False	Filter by protocol.v40_features.write_delegation_enabled
protocol.v40_features.acl_max_aces	integer	query	False	Filter by protocol.v40_features.acl_max_aces • Introduced in: 9.11 • Max value: 1024 • Min value: 192
protocol.v40_enabled	boolean	query	False	Filter by protocol.v40_enabled
protocol.v4_session_slots	integer	query	False	Filter by protocol.v4_session_slots • Introduced in: 9.13 • Max value: 2000 • Min value: 1

Name	Type	In	Required	Description
protocol.v4_session_slot_reply_cache_size	integer	query	False	Filter by protocol.v4_session_slot_reply_cache_size • Introduced in: 9.13 • Max value: 4096 • Min value: 512
protocol.v3_enabled	boolean	query	False	Filter by protocol.v3_enabled
protocol.v42_features.seclabel_enabled	boolean	query	False	Filter by protocol.v42_features.seclabel_enabled • Introduced in: 9.12
protocol.v42_features.sparsefile_ops_enabled	boolean	query	False	Filter by protocol.v42_features.sparsefile_ops_enabled • Introduced in: 9.12
protocol.v42_features.xattrs_enabled	boolean	query	False	Filter by protocol.v42_features.xattrs_enabled • Introduced in: 9.12
qtree.export_enabled	boolean	query	False	Filter by qtree.export_enabled • Introduced in: 9.10
qtree.validate_export	boolean	query	False	Filter by qtree.validate_export • Introduced in: 9.10

Name	Type	In	Required	Description
transport.tcp_enabled	boolean	query	False	Filter by transport.tcp_enabled
transport.udp_enabled	boolean	query	False	Filter by transport.udp_enabled
transport.rdma_enabled	boolean	query	False	Filter by transport.rdma_enabled • Introduced in: 9.12
transport.tcp_max_transfer_size	integer	query	False	Filter by transport.tcp_max_transfer_size • Introduced in: 9.11 • Max value: 1048576 • Min value: 8192
access_cache_config.ttl_positive	integer	query	False	Filter by access_cache_config.ttl_positive • Introduced in: 9.10
access_cache_config.isDnsTTLEnabled	boolean	query	False	Filter by access_cache_config.isDnsTTLEnabled • Introduced in: 9.10
access_cache_config.ttl_failure	integer	query	False	Filter by access_cache_config.ttl_failure • Introduced in: 9.10

Name	Type	In	Required	Description
access_cache_config.ttl_negative	integer	query	False	Filter by access_cache_config.ttl_negative • Introduced in: 9.10
access_cache_config.harvest_timeout	integer	query	False	Filter by access_cache_config.harvest_timeout • Introduced in: 9.10
exports.name_service_lookup_protocol	string	query	False	Filter by exports.name_service_lookup_protocol • Introduced in: 9.11
exports.netgroup_trust_any_nsswitch_no_match	boolean	query	False	Filter by exports.netgroup_trust_any_nsswitch_no_match • Introduced in: 9.11
protocol_access_rules.nfs4_access_type	string	query	False	Filter by protocol_access_rules.nfs4_access_type • Introduced in: 9.10
protocol_access_rules.nfs3_access_type	string	query	False	Filter by protocol_access_rules.nfs3_access_type • Introduced in: 9.10

Name	Type	In	Required	Description
protocol_access_rules.cifs_access_type	string	query	False	Filter by protocol_access_rules.cifs_access_type • Introduced in: 9.10
auth_sys_extended_groups_enabled	boolean	query	False	Filter by auth_sys_extended_groups_enabled • Introduced in: 9.8
metric.v3.status	string	query	False	Filter by metric.v3.status • Introduced in: 9.7
metric.v3.latency.read	integer	query	False	Filter by metric.v3.latency.read • Introduced in: 9.7
metric.v3.latency.total	integer	query	False	Filter by metric.v3.latency.total • Introduced in: 9.7
metric.v3.latency.write	integer	query	False	Filter by metric.v3.latency.write • Introduced in: 9.7
metric.v3.latency.other	integer	query	False	Filter by metric.v3.latency.other • Introduced in: 9.7

Name	Type	In	Required	Description
metric.v3.throughput.write	integer	query	False	Filter by metric.v3.throughput.write • Introduced in: 9.7
metric.v3.throughput.total	integer	query	False	Filter by metric.v3.throughput.total • Introduced in: 9.7
metric.v3.throughput.read	integer	query	False	Filter by metric.v3.throughput.read • Introduced in: 9.7
metric.v3.iops.read	integer	query	False	Filter by metric.v3.iops.read • Introduced in: 9.7
metric.v3.iops.total	integer	query	False	Filter by metric.v3.iops.total • Introduced in: 9.7
metric.v3.iops.write	integer	query	False	Filter by metric.v3.iops.write • Introduced in: 9.7
metric.v3.iops.other	integer	query	False	Filter by metric.v3.iops.other • Introduced in: 9.7

Name	Type	In	Required	Description
metric.v3.duration	string	query	False	Filter by metric.v3.duration • Introduced in: 9.7
metric.v3.timestamp	string	query	False	Filter by metric.v3.timestamp • Introduced in: 9.7
metric.v41.status	string	query	False	Filter by metric.v41.status • Introduced in: 9.8
metric.v41.latency.read	integer	query	False	Filter by metric.v41.latency.read • Introduced in: 9.8
metric.v41.latency.total	integer	query	False	Filter by metric.v41.latency.total • Introduced in: 9.8
metric.v41.latency.write	integer	query	False	Filter by metric.v41.latency.write • Introduced in: 9.8
metric.v41.latency.other	integer	query	False	Filter by metric.v41.latency.other • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v41.throughput.write	integer	query	False	Filter by metric.v41.throughput.write • Introduced in: 9.8
metric.v41.throughput.total	integer	query	False	Filter by metric.v41.throughput.total • Introduced in: 9.8
metric.v41.throughput.read	integer	query	False	Filter by metric.v41.throughput.read • Introduced in: 9.8
metric.v41.iops.read	integer	query	False	Filter by metric.v41.iops.read • Introduced in: 9.8
metric.v41.iops.total	integer	query	False	Filter by metric.v41.iops.total • Introduced in: 9.8
metric.v41.iops.write	integer	query	False	Filter by metric.v41.iops.write • Introduced in: 9.8
metric.v41.iops.other	integer	query	False	Filter by metric.v41.iops.other • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v41.duration	string	query	False	Filter by metric.v41.duration • Introduced in: 9.8
metric.v41.timestamp	string	query	False	Filter by metric.v41.timestamp • Introduced in: 9.8
metric.v4.status	string	query	False	Filter by metric.v4.status • Introduced in: 9.8
metric.v4.latency.read	integer	query	False	Filter by metric.v4.latency.read • Introduced in: 9.8
metric.v4.latency.total	integer	query	False	Filter by metric.v4.latency.total • Introduced in: 9.8
metric.v4.latency.write	integer	query	False	Filter by metric.v4.latency.write • Introduced in: 9.8
metric.v4.latency.other	integer	query	False	Filter by metric.v4.latency.other • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v4.throughput.write	integer	query	False	Filter by metric.v4.throughput.write • Introduced in: 9.8
metric.v4.throughput.total	integer	query	False	Filter by metric.v4.throughput.total • Introduced in: 9.8
metric.v4.throughput.read	integer	query	False	Filter by metric.v4.throughput.read • Introduced in: 9.8
metric.v4.iops.read	integer	query	False	Filter by metric.v4.iops.read • Introduced in: 9.8
metric.v4.iops.total	integer	query	False	Filter by metric.v4.iops.total • Introduced in: 9.8
metric.v4.iops.write	integer	query	False	Filter by metric.v4.iops.write • Introduced in: 9.8
metric.v4.iops.other	integer	query	False	Filter by metric.v4.iops.other • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v4.duration	string	query	False	Filter by metric.v4.duration • Introduced in: 9.8
metric.v4.timestamp	string	query	False	Filter by metric.v4.timestamp • Introduced in: 9.8
windows.map_unknown_uid_to_default_user	boolean	query	False	Filter by windows.map_unknown_uid_to_default_user • Introduced in: 9.11
windows.v3_ms_dos_client_enabled	boolean	query	False	Filter by windows.v3_ms_dos_client_enabled • Introduced in: 9.11
windows.default_user	string	query	False	Filter by windows.default_user • Introduced in: 9.11
security.permitted_encryption_types	string	query	False	Filter by security.permitted_encryption_types • Introduced in: 9.11
security.rpcsec_context_idle	integer	query	False	Filter by security.rpcsec_context_idle • Introduced in: 9.11

Name	Type	In	Required	Description
security.chown_mode	string	query	False	Filter by security.chown_mode • Introduced in: 9.11
security.ntfs_unix_security	string	query	False	Filter by security.ntfs_unix_security • Introduced in: 9.11
security.nt_acl_display_permission	boolean	query	False	Filter by security.nt_acl_display_permission • Introduced in: 9.11
file_session_io_grouping_duration	integer	query	False	Filter by file_session_io_grouping_duration • Introduced in: 9.11 • Max value: 3600 • Min value: 60
statistics.v4.status	string	query	False	Filter by statistics.v4.status • Introduced in: 9.8
statistics.v4.iops_raw.read	integer	query	False	Filter by statistics.v4.iops_raw.read • Introduced in: 9.8
statistics.v4.iops_raw.total	integer	query	False	Filter by statistics.v4.iops_raw.total • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v4.iops_raw.write	integer	query	False	Filter by statistics.v4.iops_raw.write • Introduced in: 9.8
statistics.v4.iops_raw.other	integer	query	False	Filter by statistics.v4.iops_raw.other • Introduced in: 9.8
statistics.v4.latency_raw.read	integer	query	False	Filter by statistics.v4.latency_raw.read • Introduced in: 9.8
statistics.v4.latency_raw.total	integer	query	False	Filter by statistics.v4.latency_raw.total • Introduced in: 9.8
statistics.v4.latency_raw.write	integer	query	False	Filter by statistics.v4.latency_raw.write • Introduced in: 9.8
statistics.v4.latency_raw.other	integer	query	False	Filter by statistics.v4.latency_raw.other • Introduced in: 9.8
statistics.v4.throughput_raw.write	integer	query	False	Filter by statistics.v4.throughput_raw.write • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v4.throughput_raw.total	integer	query	False	Filter by statistics.v4.throughput_raw.total • Introduced in: 9.8
statistics.v4.throughput_raw.read	integer	query	False	Filter by statistics.v4.throughput_raw.read • Introduced in: 9.8
statistics.v4.timestamp	string	query	False	Filter by statistics.v4.timestamp • Introduced in: 9.8
statistics.v3.status	string	query	False	Filter by statistics.v3.status • Introduced in: 9.7
statistics.v3.iops_raw.read	integer	query	False	Filter by statistics.v3.iops_raw.read • Introduced in: 9.7
statistics.v3.iops_raw.total	integer	query	False	Filter by statistics.v3.iops_raw.total • Introduced in: 9.7
statistics.v3.iops_raw.write	integer	query	False	Filter by statistics.v3.iops_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.v3.iops_raw.other	integer	query	False	Filter by statistics.v3.iops_raw.other • Introduced in: 9.7
statistics.v3.latency_raw.read	integer	query	False	Filter by statistics.v3.latency_raw.read • Introduced in: 9.7
statistics.v3.latency_raw.total	integer	query	False	Filter by statistics.v3.latency_raw.total • Introduced in: 9.7
statistics.v3.latency_raw.write	integer	query	False	Filter by statistics.v3.latency_raw.write • Introduced in: 9.7
statistics.v3.latency_raw.other	integer	query	False	Filter by statistics.v3.latency_raw.other • Introduced in: 9.7
statistics.v3.throughput_raw.write	integer	query	False	Filter by statistics.v3.throughput_raw.write • Introduced in: 9.7
statistics.v3.throughput_raw.total	integer	query	False	Filter by statistics.v3.throughput_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.v3.throughput_raw.read	integer	query	False	Filter by statistics.v3.throughput_raw.read • Introduced in: 9.7
statistics.v3.timestamp	string	query	False	Filter by statistics.v3.timestamp • Introduced in: 9.7
statistics.v41.status	string	query	False	Filter by statistics.v41.status • Introduced in: 9.8
statistics.v41.iops_raw.read	integer	query	False	Filter by statistics.v41.iops_raw.read • Introduced in: 9.8
statistics.v41.iops_raw.total	integer	query	False	Filter by statistics.v41.iops_raw.total • Introduced in: 9.8
statistics.v41.iops_raw.write	integer	query	False	Filter by statistics.v41.iops_raw.write • Introduced in: 9.8
statistics.v41.iops_raw.other	integer	query	False	Filter by statistics.v41.iops_raw.other • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v41.latency_raw.read	integer	query	False	Filter by statistics.v41.latency_raw.read • Introduced in: 9.8
statistics.v41.latency_raw.total	integer	query	False	Filter by statistics.v41.latency_raw.total • Introduced in: 9.8
statistics.v41.latency_raw.write	integer	query	False	Filter by statistics.v41.latency_raw.write • Introduced in: 9.8
statistics.v41.latency_raw.other	integer	query	False	Filter by statistics.v41.latency_raw.other • Introduced in: 9.8
statistics.v41.throughput_raw.write	integer	query	False	Filter by statistics.v41.throughput_raw.write • Introduced in: 9.8
statistics.v41.throughput_raw.total	integer	query	False	Filter by statistics.v41.throughput_raw.total • Introduced in: 9.8
statistics.v41.throughput_raw.read	integer	query	False	Filter by statistics.v41.throughput_raw.read • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v41.timestamp	string	query	False	Filter by statistics.v41.timestamp • Introduced in: 9.8
file_session_io_grouping_count	integer	query	False	Filter by file_session_io_grouping_count • Introduced in: 9.11 • Max value: 120000 • Min value: 1000
extended_groups_limit	integer	query	False	Filter by extended_groups_limit • Introduced in: 9.8 • Max value: 1024 • Min value: 32
state	string	query	False	Filter by state
vstorage_enabled	boolean	query	False	Filter by vstorage_enabled
credential_cache.negative_ttl	integer	query	False	Filter by credential_cache.negative_ttl • Introduced in: 9.11 • Max value: 604800000 • Min value: 60000

Name	Type	In	Required	Description
credential_cache.transient_error_ttl	integer	query	False	Filter by credential_cache.transient_error_ttl • Introduced in: 9.11 • Max value: 300000 • Min value: 30000
credential_cache.positive_ttl	integer	query	False	Filter by credential_cache.positive_ttl • Introduced in: 9.11 • Max value: 604800000 • Min value: 60000
showmount_enabled	boolean	query	False	Filter by showmount_enabled • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of NFS Server Records
records	array[nfs_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_cache_config": {
        "harvest_timeout": 3600,
        "ttl_failure": 1,
        "ttl_negative": 30,
        "ttl_positive": 60
      },
      "credential_cache": {
        "negative_ttl": 7200000,
        "positive_ttl": 7200000,
        "transient_error_ttl": 72000
      },
      "exports": {
        "name_service_lookup_protocol": "string"
      },
      "extended_groups_limit": 32,
      "file_session_io_grouping_count": 5000,
      "file_session_io_grouping_duration": 120,
      "metric": {
        "v3": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "duration": "PT15S",
          "iops": {
            "read": 200,
```

```
            "total": 1000,
            "write": 100
          },
          "latency": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "v4": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "duration": "PT15S",
          "iops": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "v41": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
```

```
          },
          "duration": "PT15S",
          "iops": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        }
      },
      "protocol": {
        "v40_features": {
          "acl_max_aces": 500
        },
        "v41_features": {
          "implementation_domain": "string",
          "implementation_name": "string"
        },
        "v4_id_domain": "string"
      },
      "protocol_access_rules": {
        "cifs_access_type": "string",
        "nfs3_access_type": "string",
        "nfs4_access_type": "string"
      },
      "security": {
        "chown_mode": "string",
        "ntfs_unix_security": "string",
        "permitted_encryption_types": [
          "string"
        ]
      },
      "state": "string",
      "statistics": {
        "v3": {
```

```
          "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "v4": {
          "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "v41": {
          "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
```

```
            "write": 100
          },
          "status": "ok",
          "throughput_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "transport": {
        "tcp_max_transfer_size": 16384
      },
      "windows": {
        "default_user": "string"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.

Name	Type	Description
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.

Name	Type	Description
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules. • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
_links	_links	
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
metric	metric	Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.
statistics	statistics	Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NFS configuration for an SVM

POST `/protocols/nfs/services`

Introduced In: 9.6

Creates an NFS configuration for an SVM.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM for which to create the NFS configuration.

Default property values

If not specified in POST, the following default property values are assigned:

- `enabled` - *true*
- `state` - online
- `transport.udp_enabled` - *true*
- `transport.tcp_enabled` - *true*
- `transport.rdma_enabled` - *true*
- `protocol.v3_enabled` - *true*
- `protocol.v3_64bit_identifiers_enabled` - *false*
- `protocol.v4_id_domain` - defaultv4iddomain.com
- `protocol.v4_64bit_identifiers_enabled` - *true*
- `protocol.v4_enabled` - *false*
- `protocol.v41_enabled` - *false*
- `protocol.v40_features.acl_enabled` - *false*
- `protocol.v40_features.read_delegation_enabled` - *false*
- `protocol.v40_features.write_delegation_enabled` - *false*
- `protocol.v41_features.acl_enabled` - *false*

- `protocol.v41_features.read_delegation_enabled` - *false*
- `protocol.v41_features.write_delegation_enabled` - *false*
- `protocol.v41_features.pnfs_enabled` - *false*
- `vstorage_enabled` - *false*
- `rquota_enabled` - *false*
- `showmount_enabled` - *true*
- `auth_sys_extended_groups_enabled` - *false*
- `extended_groups_limit` - *32*
- `qtree.export_enabled` - *false*
- `qtree.validate_export` - *true*
- `access_cache_config.ttl_positive` - *60*
- `access_cache_config.ttl_negative` - *30*
- `access_cache_config.ttl_failure` - *1*
- `access_cache_config.harvest_timeout` - *3600*
- `access_cache_config.isDnsTTLEnabled` - *false*
- `file_session_io_grouping_count` - *5000*
- `file_session_io_grouping_duration` - *120*
- `security.nt_acl_display_permission` - *false*
- `exports.netgroup_trust_any_nsswitch_no_match` - *false*
- `exports.name_service_lookup_protocol` - *udp*
- `security.permitted_encryption_types` - [aes-256,aes-128,des3,des]
- `security.rpcsec_context_idle` - *0*
- `security.chown_mode` - *use_export_policy*
- `security.ntfs_unix_security` - *use_export_policy*
- `windows.v3_ms_dos_client_enabled` - *false*
- `windows.default_user` - ""
- `windows.map_unknown_uid_to_default_user` - *true*
- `credential_cache.positive_ttl` - *86400000*
- `credential_cache.negative_ttl` - *7200000*
- `credential_cache.transient_error_ttl` - *30000*
- `protocol.v40_features.acl_preserve` - *true*
- `protocol.v41_features.implementation_domain` - 'netapp.com'
- `protocol.v40_features.acl_max_aces` - *400*
- `protocol.v3_features.ejukebox_enabled` - *true*

- `protocol.v3_features.connection_drop` - *true*
- `protocol.v3_features.fsid_change` - *true*
- `protocol.v3_features.mount_daemon_port` - *635*
- `protocol.v3_features.network_lock_manager_port` - *4045*
- `protocol.v3_features.network_status_monitor_port` - *4046*
- `protocol.v3_features.rquota_daemon_port` - *4046*
- `protocol.v3_features.mount_root_only` - *true*
- `transport.tcp_max_transfer_size` - *65536*
- `root.ignore_nt_acl` - *false*
- `root.skip_write_permission_check` - *false*
- `protocol.v40_features.referrals_enabled` - *false*
- `protocol.v41_features.referrals_enabled` - *false*
- `protocol.v4_fsid_change` - *true*
- `protocol.v4_lease_seconds` - 30
- `protocol.v4_grace_seconds` - 45
- `protocol.v4_session_slots` - 180
- `protocol.v4_session_slot_reply_cache_size` - 640

Related ONTAP commands

- `vserver nfs create`
- `export-policy access-cache config show`

Learn more

- DOC /protocols/nfs/services

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_cache_config	access_cache_config	

Name	Type	Description
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example request

```
{
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "negative_ttl": 7200000,
    "positive_ttl": 7200000,
    "transient_error_ttl": 72000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "protocol": {
    "v40_features": {
      "acl_max_aces": 500
    },
    "v41_features": {
      "implementation_domain": "string",
      "implementation_name": "string"
    },
    "v4_id_domain": "string"
  },
  "protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
  },
  "security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
      "string"
    ]
  },
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
    },
    "transport": {
      "tcp_max_transfer_size": 16384
    },
    "windows": {
      "default_user": "string"
    }
  }
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of NFS Server Records
records	array[nfs_service]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "access_cache_config": {
        "harvest_timeout": 3600,
        "ttl_failure": 1,
        "ttl_negative": 30,
        "ttl_positive": 60
      },
      "credential_cache": {
        "negative_ttl": 7200000,
        "positive_ttl": 7200000,
        "transient_error_ttl": 72000
      },
      "exports": {
        "name_service_lookup_protocol": "string"
      },
      "extended_groups_limit": 32,
      "file_session_io_grouping_count": 5000,
      "file_session_io_grouping_duration": 120,
      "protocol": {
        "v40_features": {
          "acl_max_aces": 500
        },
        "v41_features": {
          "implementation_domain": "string",
          "implementation_name": "string"
        },
        "v4_id_domain": "string"
      },
      "protocol_access_rules": {
        "cifs_access_type": "string",
        "nfs3_access_type": "string",
        "nfs4_access_type": "string"
      },
      "security": {
        "chown_mode": "string",
        "ntfs_unix_security": "string",
        "permitted_encryption_types": [
          "string"
        ]
      },
      "state": "string",
```

```
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "transport": {
        "tcp_max_transfer_size": 16384
      },
      "windows": {
        "default_user": "string"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1534829	The port numbers allowed are 635 (the default) and 1024 through 9999
2621516	This operation is only supported on a data SVM
2621570	This operation is not permitted on an SVM that is configured as the destination for SVM DR.
2621574	This operation is not permitted on an SVM that is configured as the destination of a MetroCluster SVM relationship
2621706	The specified SVM UUID is incorrect for the specified SVM name
3276852	NFSv4.1 implementation name length for the SVM must be less than 256 bytes.
3276872	NFSv4 lease timeout value must not be less than 10.
3276873	NFSv4 lease timeout value must be between 10 and (protocol.v4_grace_seconds-1).

Error Code	Description
3276874	NFSv4 grace timeout value must not be greater than 180.
3276875	NFSv4 grace timeout value must be between (protocol.v4_lease_seconds+1) and 180.
3276900	NFSv4.1 implementation name cannot be an empty string
3276916	Vserver is not running
3277038	Cannot enable \"showmount\" feature because it requires an effective cluster version of Data ONTAP 8.3.0 or later
3277048	The port numbers allowed are 635 (the default) and 1024 through 9999
3277049	Cannot enable \"showmount\" feature on ID-Discard Vserver. Ensure that the Vserver is initialized and retry the command
3277052	NFSv4.x access to transitioned volumes in this Vserver could trigger conversion of non-Unicode directories to Unicode, which might impact data-serving performance. Before enabling NFSv4.x for this Vserver, refer to the Data and Configuration Transition Guide
3277069	Cannot disable TCP because the SnapDiff RPC server is in the \"on\" state
3277085	The port numbers allowed are 1024 through 9999
3277089	Attempting to create an NFS server using 64-bits for NFSv3 FSIDs and File IDs on Vserver. Older client software might not work with 64-bit identifiers
3277099	Domain name contains invalid characters or it is too short. Allowed characters are: alphabetical characters (A-Za-z), numeric characters (0-9), minus sign (-), and the period (.). The first character must be alphabetical or numeric, last character must not be a minus sign or a period. Minimum supported length: 2 characters, maximum of 256 characters
3277140	Cannot set "transport.tcp_max_transfer_size" to a value other than multiples of 4096
2621507	The NFS protocol is not allowed for the specified SVM.
2621519	SVM name is invalid. The SVM name must begin with a letter or an underscore. If the SVM is of type "sync-source", the maximum supported length is 41. Otherwise, the maximum supported length is 47.

Error Code	Description
262196	Field "access_cache_config.harvest_timeout" cannot be set in this operation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations

Name	Type	Description
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.

Name	Type	Description
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.

Name	Type	Description
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.

Name	Type	Description
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules. • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.

Name	Type	Description
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete NFS configuration for an SVM

DELETE `/protocols/nfs/services/{svm.uuid}`

Introduced In: 9.6

Deletes the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs delete`

Learn more

- DOC /protocols/nfs/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3276916	Vserver is not running
3277008	NFS Kerberos must be disabled on all LIFs of Vserver before deleting the NFS configuration. When all LIFs are disabled, try the operation
3277009	NFS Kerberos realms associated with the Vserver are deleted
3277111	Internal error. Failed to remove NFS-specific security trace filter for Vserver
3277112	Internal error. Failed to modify the protocols field of a security trace filter for Vserver

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve NFS configuration for an SVM

GET `/protocols/nfs/services/{svm.uuid}`

Introduced In: 9.6

Retrieves the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs show`
- `vserver nfs status`

Learn more

- DOC /protocols/nfs/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
metric	metric	Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	

Name	Type	Description
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
statistics	statistics	Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "negative_ttl": 7200000,
    "positive_ttl": 7200000,
    "transient_error_ttl": 72000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "metric": {
    "v3": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
```

```
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "v4": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "v41": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
```

```
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  },
  "protocol": {
    "v40_features": {
      "acl_max_aces": 500
    },
    "v41_features": {
      "implementation_domain": "string",
      "implementation_name": "string"
    },
    "v4_id_domain": "string"
  },
  "protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
  },
  "security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
      "string"
    ]
  },
  "state": "string",
  "statistics": {
    "v3": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
```

```
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "v4": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "v41": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  },
```

```
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "transport": {
    "tcp_max_transfer_size": 16384
  },
  "windows": {
    "default_user": "string"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.

Name	Type	Description
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.

Name	Type	Description
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.

Name	Type	Description
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules. • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update NFS configuration for an SVM

PATCH `/protocols/nfs/services/{svm.uuid}`

Introduced In: 9.6

Updates the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs modify`
- `vserver nfs on`
- `vserver nfs off`

- `vserver nfs start`
- `vserver nfs stop`

Learn more

- DOC /protocols/nfs/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	

Request Body

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example request

```
{
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "negative_ttl": 7200000,
    "positive_ttl": 7200000,
    "transient_error_ttl": 72000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "protocol": {
    "v40_features": {
      "acl_max_aces": 500
    },
    "v41_features": {
      "implementation_domain": "string",
      "implementation_name": "string"
    },
    "v4_id_domain": "string"
  },
  "protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
  },
  "security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
      "string"
    ]
  },
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
    },
    "transport": {
      "tcp_max_transfer_size": 16384
    },
    "windows": {
      "default_user": "string"
    }
  }
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1534829	The port numbers allowed are 635 (the default) and 1024 through 9999
2621516	This operation is only supported on a data SVM
2621574	This operation is not permitted on a SVM that is configured as the destination of a MetroCluster SVM relationship
3276852	NFSv4.1 implementation name length for the SVM must be less than 256 bytes.
3276872	NFSv4 lease timeout value must not be less than 10.
3276873	NFSv4 lease timeout value must be between 10 and (protocol.v4_grace_seconds-1).
3276874	NFSv4 grace timeout value must not be greater than 180.
3276875	NFSv4 grace timeout value must be between (protocol.v4_lease_seconds+1) and 180.
3276916	Vserver is not running
3276969	Ports cannot be modified when NFS access is enabled. Disable NFS access before changing port settings

Error Code	Description
3276994	Kerberos must be disabled on all LIFs on the SVM before adding or removing any encryption. Disable Kerberos on the LIF and retry the operation.
3277048	The port numbers allowed are 635 (the default) and 1024 through 9999
3277069	Cannot disable TCP because the SnapDiff RPC server is in the \"on\" state
3277085	The port numbers allowed are 1024 through 9999.
3277087	Attempting to reduce the number of bits used for NFSv3 FSIDs and File IDs from 64 to 32 on Vserver. This could result in collisions between different File IDs and is not recommended
3277088	Attempting to increase the number of bits used for NFSv3 FSIDs and File IDs from 32 to 64 on Vserver. This could result in older client software no longer working with the volumes owned by Vserver
3277090	Attempting to disallow multiple FSIDs per mount point on Vserver. Since this Vserver currently uses 32-bit NFSv3 FSIDs and File IDs, this could result in collisions between different File IDs and is not recommended
3277099	Domain name contains invalid characters or its too short. Allowed characters are: alphabetical characters (A-Za-z), numeric characters (0-9), minus sign (-), and the period (.). The first character must be alphabetical or numeric, last character must not be a minus sign or a period. Minimum supported length: 2 characters, maximum of 256 characters
3277140	Cannot set "transport.tcp_max_transfer_size" to a value other than multiples of 4096

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations

Name	Type	Description
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.

Name	Type	Description
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.

Name	Type	Description
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.

Name	Type	Description
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules. • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve NFS protocol historical performance metrics

GET `/protocols/nfs/services/{svm.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for the NFS protocol of an SVM.

Parameters

Name	Type	In	Required	Description
v3.latency.read	integer	query	False	Filter by v3.latency.read
v3.latency.total	integer	query	False	Filter by v3.latency.total
v3.latency.write	integer	query	False	Filter by v3.latency.write
v3.latency.other	integer	query	False	Filter by v3.latency.other
v3.status	string	query	False	Filter by v3.status
v3.throughput.write	integer	query	False	Filter by v3.throughput.write
v3.throughput.total	integer	query	False	Filter by v3.throughput.total
v3.throughput.read	integer	query	False	Filter by v3.throughput.read
v3.iops.read	integer	query	False	Filter by v3.iops.read
v3.iops.total	integer	query	False	Filter by v3.iops.total
v3.iops.write	integer	query	False	Filter by v3.iops.write

Name	Type	In	Required	Description
v3.iops.other	integer	query	False	Filter by v3.iops.other
v3.duration	string	query	False	Filter by v3.duration
v41.duration	string	query	False	Filter by v41.duration • Introduced in: 9.8
v41.iops.read	integer	query	False	Filter by v41.iops.read • Introduced in: 9.8
v41.iops.total	integer	query	False	Filter by v41.iops.total • Introduced in: 9.8
v41.iops.write	integer	query	False	Filter by v41.iops.write • Introduced in: 9.8
v41.iops.other	integer	query	False	Filter by v41.iops.other • Introduced in: 9.8
v41.throughput.write	integer	query	False	Filter by v41.throughput.write • Introduced in: 9.8
v41.throughput.total	integer	query	False	Filter by v41.throughput.total • Introduced in: 9.8

Name	Type	In	Required	Description
v41.throughput.read	integer	query	False	Filter by v41.throughput.read • Introduced in: 9.8
v41.status	string	query	False	Filter by v41.status • Introduced in: 9.8
v41.latency.read	integer	query	False	Filter by v41.latency.read • Introduced in: 9.8
v41.latency.total	integer	query	False	Filter by v41.latency.total • Introduced in: 9.8
v41.latency.write	integer	query	False	Filter by v41.latency.write • Introduced in: 9.8
v41.latency.other	integer	query	False	Filter by v41.latency.other • Introduced in: 9.8
timestamp	string	query	False	Filter by timestamp
v4.iops.read	integer	query	False	Filter by v4.iops.read • Introduced in: 9.8
v4.iops.total	integer	query	False	Filter by v4.iops.total • Introduced in: 9.8

Name	Type	In	Required	Description
v4.iops.write	integer	query	False	Filter by v4.iops.write • Introduced in: 9.8
v4.iops.other	integer	query	False	Filter by v4.iops.other • Introduced in: 9.8
v4.duration	string	query	False	Filter by v4.duration • Introduced in: 9.8
v4.latency.read	integer	query	False	Filter by v4.latency.read • Introduced in: 9.8
v4.latency.total	integer	query	False	Filter by v4.latency.total • Introduced in: 9.8
v4.latency.write	integer	query	False	Filter by v4.latency.write • Introduced in: 9.8
v4.latency.other	integer	query	False	Filter by v4.latency.other • Introduced in: 9.8
v4.status	string	query	False	Filter by v4.status • Introduced in: 9.8

Name	Type	In	Required	Description
v4.throughput.write	integer	query	False	Filter by v4.throughput.write • Introduced in: 9.8
v4.throughput.total	integer	query	False	Filter by v4.throughput.total • Introduced in: 9.8
v4.throughput.read	integer	query	False	Filter by v4.throughput.read • Introduced in: 9.8
svm.uuid	string	path	True	Unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "v3": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "v4": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
```

```
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "v41": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

records

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NFS over TLS interface configuration details

Protocols NFS tls interfaces endpoint overview

Examples

Retrieving the NFS over TLS interface configuration details

```
# The API:
GET /api/protocols/nfs/tls/interfaces

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/tls/interfaces"
```

Updating the NFS over TLS interface configuration

```
# The API:
PATCH /api/protocols/nfs/tls/interfaces/{interface.uuid}

# The call:
curl -d "@test_patch_nfs_tls_interface.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/tls/interfaces/e62936de-7342-11e8-9eb4-0050568be2b7"
test_patch_nfs_tls_interface.txt(body):
{
 "enabled" : "true"
}
```

Retrieve NFS over TLS interface configurations

GET `/protocols/nfs/tls/interfaces`

Introduced In: 9.15

Retrieves NFS over TLS interfaces.

Related ONTAP commands

- `vserver nfs tls interface show`

Learn more

- DOC /protocols/nfs/tls/interfaces

Parameters

Name	Type	In	Required	Description
certificate.uuid	string	query	False	Filter by certificate.uuid
certificate.name	string	query	False	Filter by certificate.name
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
interface.name	string	query	False	Filter by interface.name

Name	Type	In	Required	Description
interface.ip.address	string	query	False	Filter by interface.ip.address
interface.uuid	string	query	False	Filter by interface.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[nfs_tls_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

certificate

Specifies the certificate that is used for creating NFS over TLS connections.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface.

Name	Type	Description
_links	_links	
ip	ip	IP information

Name	Type	Description
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nfs_tls_interface

Name	Type	Description
_links	_links	
certificate	certificate	Specifies the certificate that is used for creating NFS over TLS connections.
enabled	boolean	Indicates whether NFS over TLS is enabled.
interface	interface	Network interface.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NFS over TLS interface configuration

GET `/protocols/nfs/tls/interfaces/{interface.uuid}`

Introduced In: 9.15

Retrieves an NFS over TLS interface.

Related ONTAP commands

- `vserver nfs tls interface show`

Learn more

- DOC /protocols/nfs/tls/interfaces

Parameters

Name	Type	In	Required	Description
interface.uuid	string	path	True	Network interface UUID.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
certificate	certificate	Specifies the certificate that is used for creating NFS over TLS connections.
enabled	boolean	Indicates whether NFS over TLS is enabled.
interface	interface	Network interface.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
262197	The value provided is invalid for field "fields".

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

certificate

Specifies the certificate that is used for creating NFS over TLS connections.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the properties of an NFS over TLS interface

PATCH `/protocols/nfs/tls/interfaces/{interface.uuid}`

Introduced In: 9.15

Updates the properties of an NFS over TLS interface.

Optional query parameter

- `skip-san-validation` - Specifies whether the server should ignore validating the certificate for Subject Alternate Name.

Related ONTAP commands

- `vserver nfs tls interface modify`
- `vserver nfs tls interface enable`
- `vserver nfs tls interface disable`

Learn more

- DOC /protocols/nfs/tls/interfaces

Parameters

Name	Type	In	Required	Description
interface.uuid	string	path	True	Network interface UUID.
skip_san_validation	boolean	query	False	Indicates whether Subject Alternate Name (SAN) validation has to be skipped. • Introduced in: 9.17

Request Body

Name	Type	Description
certificate	certificate	Specifies the certificate that is used for creating NFS over TLS connections.
enabled	boolean	Indicates whether NFS over TLS is enabled.
interface	interface	Network interface.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "interface": {
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
2	The value provided is an invalid value for field "interface.uuid".
4	The entry doesn’t exist
3277204	TLS already enabled/disabled on this LIF.
3277205	Cannot enable TLS because no certificate was provided.
3277206	The "enabled" is a required field.
3277210	The FQDN of the LIF IP address and the common name present in the certificate do not match. Update the certificate so that the common name and LIF FQDN match and retry the operation.

Error codes	Description
3277217	Failed to enable TLS on LIF on vserver because the certificate does not have LIF as subject alternate name.
92405900	Certificate not found for the SVM.
92406020	Only certificates of type 'server' are supported on the SVM.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

Specifies the certificate that is used for creating NFS over TLS connections.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

ip

IP information

interface

Network interface.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nfs_tls_interface

Name	Type	Description
certificate	certificate	Specifies the certificate that is used for creating NFS over TLS connections.
enabled	boolean	Indicates whether NFS over TLS is enabled.
interface	interface	Network interface.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and create Vscan configuration

Protocols Vscan endpoint overview

Overview

Use Vscan to protect data from being compromised by viruses or other malicious code. Vscan combines best-in-class third party antivirus software with ONTAP features that give you the flexibility you need to control which files get scanned and when. Storage systems offload scanning operations to external servers hosting antivirus software from third party vendors. An Antivirus Connector on the external server handles communications between the storage system and the antivirus software. Vscan is not supported on continuous availability (CA) shares.

Examples

Retrieving all of the Vscan configurations

```
# The API:
/api/protocols/vscan

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/vscan?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "03ce5c36-f269-11e8-8852-0050568e5298",
      "name": "vs1"
    },
    "enabled": true,
    "scanner_pools": [
      {
        "name": "scanner-1",
        "servers": [
          "1.1.1.1",
          "10.72.204.27"
        ],
        "privileged_users": [
          "cifs\\u1",
          "cifs\\u2"
        ],
        "role": "primary",
        "cluster": {
          "name": "Cluster1",
          "uuid": "0228714d-f268-11e8-8851-0050568e5298"
        }
```

```
      },
      {
        "name": "scanner-2",
        "servers": [
          "1.1.1.1",
          "10.72.204.27"
        ],
        "privileged_users": [
          "cifs\\u1",
          "cifs\\u2"
        ],
        "role": "primary",
        "cluster": {
          "name": "Cluster1",
          "uuid": "0228714d-f268-11e8-8851-0050568e5298"
        }
      }
    ],
    "on_access_policies": [
      {
        "name": "default_CIFS",
        "vsName": "vs1",
        "enabled": true,
        "mandatory": true,
        "scope": {
          "max_file_size": 2147483648,
          "include_extensions": [
            "*"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      },
      {
        "name": "on-access-test1",
        "vsName": "vs1",
        "enabled": false,
        "mandatory": true,
        "scope": {
          "max_file_size": 10000,
          "exclude_paths": [
            "\\dir"
          ],
          "include_extensions": [
            "mp*",
```

```
            "txt"
          ],
          "exclude_extensions": [
            "mp*",
            "txt"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      },
      {
        "name": "on-access-test2",
        "vsName": "vs1",
        "enabled": false,
        "mandatory": true,
        "scope": {
          "max_file_size": 10000,
          "exclude_paths": [
            "\\dir"
          ],
          "include_extensions": [
            "mp*",
            "txt"
          ],
          "exclude_extensions": [
            "mp*",
            "txt"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      }
    ],
    "on_demand_policies": [
      {
        "name": "task-1",
        "scan_paths": [
          "/vol1"
        ],
        "log_path": "/vol1",
        "scope": {
          "max_file_size": 10000,
          "exclude_paths": [
            "/vol1"
```

```
          ],
          "include_extensions": [
            "vmdk",
            "mp*"
          ],
          "exclude_extensions": [
            "mp3",
            "mp4"
          ],
          "scan_without_extension": true
        }
      },
      {
        "name": "task-2",
        "scan_paths": [
          "/vol1"
        ],
        "log_path": "/vol2",
        "scope": {
          "max_file_size": 10000,
          "exclude_paths": [
            "/vol2"
          ],
          "include_extensions": [
            "vmdk",
            "mp*"
          ],
          "exclude_extensions": [
            "mp3",
            "mp4"
          ],
          "scan_without_extension": true
        }
      }
    ]
  },
  {
    "svm": {
      "uuid": "24c2567a-f269-11e8-8852-0050568e5298",
      "name": "vs2"
    },
    "enabled": false,
    "scanner_pools": [
      {
        "name": "sp2",
        "servers": [
```

```
          "1.1.1.1"
        ],
        "privileged_users": [
          "cifs\\u1"
        ],
        "role": "idle"
      }
    ],
    "on_access_policies": [
      {
        "name": "default_CIFS",
        "vsName": "vs2",
        "enabled": true,
        "mandatory": true,
        "scope": {
          "max_file_size": 2147483648,
          "include_extensions": [
            "*"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      },
      {
        "name": "ap1",
        "vsName": "vs2",
        "enabled": false,
        "mandatory": true,
        "scope": {
          "max_file_size": 2147483648,
          "include_extensions": [
            "*"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      }
    ],
    "on_demand_policies": [
      {
        "name": "t1",
        "scan_paths": [
          "/vol1"
        ],
```

```
        "log_path": "/vol1",
        "scope": {
          "max_file_size": 10737418240,
          "include_extensions": [
            "*"
          ],
          "scan_without_extension": true
        }
      }
    ]
  }
],
"num_records": 2
}
```


Retrieving all Vscan configurations for a particular SVM


```
# The API:
/api/protocols/vscan/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/24c2567a-f269-11e8-
8852-0050568e5298?fields=*" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "24c2567a-f269-11e8-8852-0050568e5298",
  "name": "vs2"
},
"enabled": false,
"scanner_pools": [
  {
    "name": "sp2",
    "servers": [
      "1.1.1.1"
    ],
    "privileged_users": [
      "cifs\\u1"
    ],
    "role": "idle"
  }
],
"on_access_policies": [
  {
```

```
    "name": "default_CIFS",
    "vsName": "vs2",
    "enabled": true,
    "mandatory": true,
    "scope": {
      "max_file_size": 2147483648,
      "include_extensions": [
        "*"
      ],
      "scan_without_extension": true,
      "scan_readonly_volumes": false,
      "only_execute_access": false
    }
  },
  {
    "name": "ap1",
    "vsName": "vs2",
    "enabled": false,
    "mandatory": true,
    "scope": {
      "max_file_size": 2147483648,
      "include_extensions": [
        "*"
      ],
      "scan_without_extension": true,
      "scan_readonly_volumes": false,
      "only_execute_access": false
    }
  }
],
"on_demand_policies": [
  {
    "name": "t1",
    "scan_paths": [
      "/vol1"
    ],
    "log_path": "/vol1",
    "scope": {
      "max_file_size": 10737418240,
      "include_extensions": [
        "*"
      ],
      "scan_without_extension": true
    }
  }
]
```

```
}
```

Creating a Vscan configuration

```
# The API:
/api/protocols/vscan

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan?return_records=true"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"enabled\": true, \"on_access_policies\": [ { \"enabled\": true,
\"mandatory\": true, \"name\": \"on-access-test\", \"scope\": {
\"exclude_extensions\": [ \"mp*\", \"txt\" ], \"exclude_paths\": [
\"\\\\vol\" ], \"include_extensions\": [ \"mp*\", \"txt\" ],
\"max_file_size\": 21474, \"only_execute_access\": false,
\"scan_readonly_volumes\": false, \"scan_without_extension\": true } } ],
\"on_demand_policies\": [ { \"log_path\": \"/vol\", \"name\": \"task-1\",
\"scan_paths\": [ \"/vol\" ], \"schedule\": { \"name\": \"daily\",
\"uuid\": \"d4984822-17b7-11e9-b450-0050568ecd85\" }, \"scope\": {
\"exclude_extensions\": [ \"mp3\", \"mp4\" ], \"exclude_paths\": [
\"/vol\" ], \"include_extensions\": [ \"vmdk\", \"mp*\" ],
\"max_file_size\": 10737, \"scan_without_extension\": true } } ],
\"scanner_pools\": [ { \"cluster\": { \"name\": \"Cluster1\", \"uuid\":
\"ab746d77-17b7-11e9-b450-0050568ecd85\" }, \"name\": \"scanner-1\",
\"privileged_users\": [ \"cifs\\\\u1\", \"cifs\\\\u2\" ], \"role\":
\"primary\", \"servers\": [ \"1.1.1.1\", \"10.72.204.27\" ] } ], \"svm\":
{ \"name\": \"vs1\", \"uuid\": \"b103be27-17b8-11e9-b451-0050568ecd85\"
}}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
    "uuid": "b103be27-17b8-11e9-b451-0050568ecd85",
    "name": "vs1"
    },
    "enabled": true,
    "scanner_pools": [
      {
        "name": "scanner-1",
        "servers": [
          "1.1.1.1",
          "10.72.204.27"
```

```
        ],
        "privileged_users": [
          "cifs\\u1",
          "cifs\\u2"
        ],
        "role": "primary",
        "cluster": {
          "name": "Cluster1",
          "uuid": "ab746d77-17b7-11e9-b450-0050568ecd85"
        }
      }
    ],
    "on_access_policies": [
      {
        "name": "on-access-test",
        "enabled": true,
        "mandatory": true,
        "scope": {
          "max_file_size": 21474,
          "exclude_paths": [
            "\\vol"
          ],
          "include_extensions": [
            "mp*",
            "txt"
          ],
          "exclude_extensions": [
            "mp*",
            "txt"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      }
    ],
    "on_demand_policies": [
      {
        "name": "task-1",
        "scan_paths": [
          "/vol"
        ],
        "log_path": "/vol",
        "schedule": {
          "uuid": "d4984822-17b7-11e9-b450-0050568ecd85",
          "name": "daily"
```

```
        },
        "scope": {
          "max_file_size": 10737,
          "exclude_paths": [
            "//"
          ],
          "include_extensions": [
            "vmdk",
            "mp*"
          ],
          "exclude_extensions": [
            "mp3",
            "mp4"
          ],
          "scan_without_extension": true
        }
      }
    ]
  }
]
}
```

Creating multiple Vscan scanner-pools for the specified SVM

```
# The API:
/api/protocols/vscan

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan?return_records=true"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"scanner_pools\": [ { \"cluster\": { \"name\": \"Cluster1\", \"uuid\":
\"ab746d77-17b7-11e9-b450-0050568ecd85\" }, \"name\": \"scanner-1\",
\"privileged_users\": [ \"cifs\\\\u1\", \"cifs\\\\u2\" ], \"role\":
\"primary\", \"servers\": [ \"1.1.1.1\", \"10.72.204.27\" ] }, {
\"cluster\": { \"name\": \"Cluster1\", \"uuid\": \"ab746d77-17b7-11e9-
b450-0050568ecd85\" }, \"name\": \"scanner-2\", \"privileged_users\": [
\"cifs\\\\u3\", \"cifs\\\\u4\" ], \"role\": \"primary\", \"servers\": [
\"1.1.1.5\", \"10.72.3.27\" ] } ], \"svm\": { \"name\": \"vs1\", \"uuid\":
\"b103be27-17b8-11e9-b451-0050568ecd85\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
```

```
    "svm": {
    "uuid": "b103be27-17b8-11e9-b451-0050568ecd85",
    "name": "vs1"
    },
    "scanner_pools": [
      {
        "name": "scanner-1",
        "servers": [
          "1.1.1.1",
          "10.72.204.27"
        ],
        "privileged_users": [
          "cifs\\u1",
          "cifs\\u2"
        ],
        "role": "primary",
        "cluster": {
          "name": "Cluster1",
          "uuid": "ab746d77-17b7-11e9-b450-0050568ecd85"
        }
      },
      {
        "name": "scanner-2",
        "servers": [
          "1.1.1.5",
          "10.72.3.27"
        ],
        "privileged_users": [
          "cifs\\u3",
          "cifs\\u4"
        ],
        "role": "primary",
        "cluster": {
          "name": "Cluster1",
          "uuid": "ab746d77-17b7-11e9-b450-0050568ecd85"
        }
      }
    ]
  }
]
}
```


Creating multiple Vscan On-access policies for a specified SVM

```
# The API:
```

```
/api/protocols/vscan

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan?return_records=true"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"on_access_policies\": [ { \"enabled\": false, \"mandatory\": true,
\"name\": \"on-access-test11\", \"scope\": { \"exclude_extensions\": [
\"mp*\", \"txt\" ], \"exclude_paths\": [ \"\\\\vol\" ],
\"include_extensions\": [ \"mp*\", \"txt\" ], \"max_file_size\": 214748,
\"only_execute_access\": false, \"scan_readonly_volumes\": false,
\"scan_without_extension\": true } }, { \"enabled\": false, \"mandatory\":
true, \"name\": \"on-access-test10\", \"scope\": { \"exclude_extensions\":
[ \"mp*\", \"txt\" ], \"exclude_paths\": [ \"\\\\vol\" ],
\"include_extensions\": [ \"mp*\", \"txt\" ], \"max_file_size\": 21474,
\"only_execute_access\": false, \"scan_readonly_volumes\": false,
\"scan_without_extension\": true } } ], \"svm\": { \"name\": \"vs1\",
\"uuid\": \"b103be27-17b8-11e9-b451-0050568ecd85\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "b103be27-17b8-11e9-b451-0050568ecd85",
      "name": "vs1"
    },
    "on_access_policies": [
      {
        "name": "on-access-test11",
        "enabled": false,
        "mandatory": true,
        "scope": {
          "max_file_size": 214748,
          "exclude_paths": [
            "\\vol"
          ],
          "include_extensions": [
            "mp*",
            "txt"
          ],
          "exclude_extensions": [
            "mp*",
            "txt"
          ],
          "scan_without_extension": true,
```

```
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      },
      {
        "name": "on-access-test10",
        "enabled": false,
        "mandatory": true,
        "scope": {
          "max_file_size": 21474,
          "exclude_paths": [
            "\\vol"
          ],
          "include_extensions": [
            "mp*",
            "txt"
          ],
          "exclude_extensions": [
            "mp*",
            "txt"
          ],
          "scan_without_extension": true,
          "scan_readonly_volumes": false,
          "only_execute_access": false
        }
      }
    ]
  }
]
}
```


Creating multiple Vscan On-demand policies for a specified SVM

```
# The API:
/api/protocols/vscan

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan?return_records=true"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"on_demand_policies\": [ { \"log_path\": \"/vol\", \"name\": \"task-1\",
\"scan_paths\": [ \"/vol\" ], \"schedule\": { \"name\": \"daily\",
\"uuid\": \"d4984822-17b7-11e9-b450-0050568ecd85\" }, \"scope\": {
\"exclude_extensions\": [ \"mp3\", \"mp4\" ], \"exclude_paths\": [
\"/vol1\" ], \"include_extensions\": [ \"vmdk\", \"mp*\" ],
\"max_file_size\": 107374, \"scan_without_extension\": true } }, {
```

```
\"log_path\": \"/vol\", \"name\": \"task-2\", \"scan_paths\": [ \"/vol\"
], \"scope\": { \"exclude_extensions\": [ \"mp3\", \"mp4\" ],
\"exclude_paths\": [ \"/vol1\" ], \"include_extensions\": [ \"vmdk\",
\"mp*\" ], \"max_file_size\": 107374, \"scan_without_extension\": true } }
], \"svm\": { \"name\": \"vs1\", \"uuid\": \"b103be27-17b8-11e9-b451-
0050568ecd85\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "b103be27-17b8-11e9-b451-0050568ecd85",
      "name": "vs1"
    },
    "on_demand_policies": [
      {
        "name": "task-1",
        "scan_paths": [
          "/vol"
        ],
        "log_path": "/vol",
        "schedule": {
          "uuid": "d4984822-17b7-11e9-b450-0050568ecd85",
          "name": "daily"
        },
        "scope": {
          "max_file_size": 107374,
          "exclude_paths": [
            "/vol1"
          ],
          "include_extensions": [
            "vmdk",
            "mp*"
          ],
          "exclude_extensions": [
            "mp3",
            "mp4"
          ],
          "scan_without_extension": true
        }
      },
      {
        "name": "task-2",
        "scan_paths": [
```

```
          "/vol"
        ],
        "log_path": "/vol",
        "scope": {
          "max_file_size": 107374,
          "exclude_paths": [
            "/vol1"
          ],
          "include_extensions": [
            "vmdk",
            "mp*"
          ],
          "exclude_extensions": [
            "mp3",
            "mp4"
          ],
          "scan_without_extension": true
        }
      }
    ]
  }
]
}
```


Enabling Vscan for a specified SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/03ce5c36-f269-11e8-
8852-0050568e5298" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"enabled\": true}"
```

Clearing the Vscan cache for the specified SVM

```
# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/03ce5c36-f269-11e8-
8852-0050568e5298" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"cache_clear\": true}"
```

Deleting the Vscan configuration for a specified SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/vscan/03ce5c36-f269-11e8-
8852-0050568e5298" -H "accept: application/json"
```

Retrieve the Vscan configuration

GET `/protocols/vscan`

Introduced In: 9.6

Retrieves the Vscan configuration.
This includes scanner-pools, On-Access policies, On-Demand policies, and information about whether a Vscan is enabled or disabled on an SVM.

Important notes:

- You can enable only one Vscan configuration at a time for an SVM.
- You can only query using `svm.uuid` or `svm.name`.

Related ONTAP commands

- `vserver vscan show`
- `vserver vscan scanner-pool show`
- `vserver vscan scanner-pool servers show`
- `vserver vscan scanner-pool privileged-users show`
- `vserver vscan on-access-policy show`
- `vserver vscan on-access-policy file-ext-to-exclude show`
- `vserver vscan on-access-policy file-ext-to-include show`
- `vserver vscan on-access-policy paths-to-exclude show`
- `vserver vscan on-demand-task show`

Learn more

- DOC /protocols/vscan
- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
on_access_policies.enabled	boolean	query	False	Filter by on_access_policies.enabled
on_access_policies.name	string	query	False	Filter by on_access_policies.name • maxLength: 256 • minLength: 1
on_access_policies.scope.include_extensions	string	query	False	Filter by on_access_policies.scope.include_extensions
on_access_policies.scope.scan_readonly_volumes	boolean	query	False	Filter by on_access_policies.scope.scan_readonly_volumes
on_access_policies.scope.only_execute_access	boolean	query	False	Filter by on_access_policies.scope.only_execute_access
on_access_policies.scope.exclude_extensions	string	query	False	Filter by on_access_policies.scope.exclude_extensions
on_access_policies.scope.max_file_size	integer	query	False	Filter by on_access_policies.scope.max_file_size • Max value: 1099511627776 • Min value: 1024
on_access_policies.scope.scan_without_extension	boolean	query	False	Filter by on_access_policies.scope.scan_without_extension

Name	Type	In	Required	Description
on_access_policies.scope.exclude_paths	string	query	False	Filter by on_access_policies.scope.exclude_paths • maxLength: 255 • minLength: 1
on_access_policies.mandatory	boolean	query	False	Filter by on_access_policies.mandatory
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
scanner_pools.privileged_users	string	query	False	Filter by scanner_pools.privileged_users
scanner_pools.servers	string	query	False	Filter by scanner_pools.servers
scanner_pools.role	string	query	False	Filter by scanner_pools.role
scanner_pools.cluster.name	string	query	False	Filter by scanner_pools.cluster.name
scanner_pools.cluster.uuid	string	query	False	Filter by scanner_pools.cluster.uuid
scanner_pools.name	string	query	False	Filter by scanner_pools.name • maxLength: 256 • minLength: 1

Name	Type	In	Required	Description
on_demand_policies.log_path	string	query	False	Filter by on_demand_policies.log_path
on_demand_policies.name	string	query	False	Filter by on_demand_policies.name • maxLength: 256 • minLength: 1
on_demand_policies.scope.exclude_extensions	string	query	False	Filter by on_demand_policies.scope.exclude_extensions
on_demand_policies.scope.include_extensions	string	query	False	Filter by on_demand_policies.scope.include_extensions
on_demand_policies.scope.exclude_paths	string	query	False	Filter by on_demand_policies.scope.exclude_paths • maxLength: 255 • minLength: 1
on_demand_policies.scope.scan_without_extension	boolean	query	False	Filter by on_demand_policies.scope.scan_without_extension
on_demand_policies.scope.max_file_size	integer	query	False	Filter by on_demand_policies.scope.max_file_size • Max value: 1099511627776 • Min value: 1024
on_demand_policies.scan_paths	string	query	False	Filter by on_demand_policies.scan_paths

Name	Type	In	Required	Description
on_demand_policies.schedule.uuid	string	query	False	Filter by on_demand_policies.schedule.uuid
on_demand_policies.schedule.name	string	query	False	Filter by on_demand_policies.schedule.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[vscan]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "on_access_policies": [
        {
          "name": "on-access-test",
          "scope": {
            "exclude_extensions": [
              "mp*",
              "txt"
            ],
            "exclude_paths": [
              "\\dir1\\dir2\\name",
              "\\vol\\a b",
              "\\vol\\a,b\\"
            ],
            "include_extensions": [
              "mp*",
              "txt"
            ],
            "max_file_size": 2147483648
          }
        }
      ],
      "on_demand_policies": [
        {
          "log_path": "/vol0/report_dir",
          "name": "task-1",
          "scan_paths": [
            "/vol1/",
```

```
            "/vol2/cifs/"
          ],
          "schedule": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "weekly",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "scope": {
            "exclude_extensions": [
              "mp3",
              "mp4"
            ],
            "exclude_paths": [
              "/vol1/cold-files/",
              "/vol1/cifs/names"
            ],
            "include_extensions": [
              "vmdk",
              "mp*"
            ],
            "max_file_size": 10737418240
          }
        }
      ],
      "scanner_pools": [
        {
          "cluster": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "cluster1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "name": "scanner-1",
          "privileged_users": [
            "cifs\\u1",
            "cifs\\u2"
          ],
          "role": "string",
          "servers": [
```

```
            "1.1.1.1",
            "10.72.204.27",
            "vmwin204-27.fsct.nb"
          ]
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_access_policy

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for

viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	

schedule

Schedule of the task.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_demand_policy

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	

cluster_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".

Name	Type	Description
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.10
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.10

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan

Vscan can be used to protect data from being compromised by viruses or other malicious code. This combines best-in-class third-party antivirus software with ONTAP features that give you the flexibility you need to control which files get scanned and when. Storage systems offload scanning operations to external servers hosting antivirus software from third-party vendors. An Antivirus Connector on the external server handles communications between the storage system and the antivirus software.

Name	Type	Description
_links	_links	
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.
on_access_policies	array[vscan_on_access_policy]	
on_demand_policies	array[vscan_on_demand_policy]	
scanner_pools	array[scanner_pool]	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a Vscan configuration

POST `/protocols/vscan`

Introduced In: 9.6

Creates a Vscan configuration, which includes a list of scanner-pools, Vscan On-Access policies and Vscan On-Demand policies. Defines whether the Vscan configuration you create is enabled or disabled for a specified SVM.

Important notes:

- You can enable only one Vscan configuration at a time for an SVM.
- There needs to be at least one active scanner-pool and one enabled On-Access policy to enable Vscan successfully.
- By default, a Vscan is enabled when it's created.
- By default, the Vscan On-Access policies created from this endpoint are in the disabled state. You can use the On-Access policy PATCH endpoint to enable a particular On-Access policy. In ONTAP 9.6, only one Vscan On-Access policy can be enabled and only one Vscan On-Demand policy can be scheduled on an SVM.
- Vscan is not supported on continuous availability (CA) shares.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the Vscan configuration.

Recommended optional properties

- `scanner_pools` - There must be at least one active scanner-pool for Vscan configuration. Created either through Vscan POST operation or scanner-pools POST operation.

Default property values

If not specified in POST, the following default property value is assigned:

- `enabled` - *true*

Related ONTAP commands

- `vserver vscan enable`

- `vserver vscan scanner-pool create`
- `vserver vscan scanner-pool apply-policy`
- `vserver vscan scanner-pool servers add`
- `vserver vscan scanner-pool privileged-users add`
- `vserver vscan on-access-policy create`
- `vserver vscan on-access-policy file-ext-to-exclude add`
- `vserver vscan on-access-policy file-ext-to-include add`
- `vserver vscan on-access-policy paths-to-exclude add`
- `vserver vscan on-demand-task create`

Learn more

- DOC /protocols/vscan
- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.
on_access_policies	array[vscan_on_access_policy]	
on_demand_policies	array[vscan_on_demand_policy]	
scanner_pools	array[scanner_pool]	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "on_access_policies": [
    {
      "name": "on-access-test",
      "scope": {
        "exclude_extensions": [
          "mp*",
          "txt"
        ],
        "exclude_paths": [
          "\\dir1\\dir2\\name",
          "\\vol\\a b",
          "\\vol\\a,b\\"
        ],
        "include_extensions": [
          "mp*",
          "txt"
        ],
        "max_file_size": 2147483648
      }
    }
  ],
  "on_demand_policies": [
    {
      "log_path": "/vol0/report_dir",
      "name": "task-1",
      "scan_paths": [
        "/vol1/",
        "/vol2/cifs/"
      ],
      "schedule": {
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scope": {
        "exclude_extensions": [
          "mp3",
          "mp4"
        ],
        "exclude_paths": [
          "/vol1/cold-files/",
          "/vol1/cifs/names"
        ],
        "include_extensions": [
```

```
            "vmdk",
            "mp*"
          ],
          "max_file_size": 10737418240
        }
      }
    ],
    "scanner_pools": [
      {
        "cluster": {
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "name": "scanner-1",
        "privileged_users": [
          "cifs\\u1",
          "cifs\\u2"
        ],
        "role": "string",
        "servers": [
          "1.1.1.1",
          "10.72.204.27",
          "vmwin204-27.fsct.nb"
        ]
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[vscan]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "on_access_policies": [
        {
          "name": "on-access-test",
          "scope": {
            "exclude_extensions": [
              "mp*",
              "txt"
            ],
            "exclude_paths": [
              "\\dir1\\dir2\\name",
              "\\vol\\a b",
              "\\vol\\a,b\\"
            ],
            "include_extensions": [
              "mp*",
              "txt"
            ],
            "max_file_size": 2147483648
          }
        }
      ],
      "on_demand_policies": [
        {
          "log_path": "/vol0/report_dir",
          "name": "task-1",
          "scan_paths": [
            "/vol1/",
            "/vol2/cifs/"
          ],
          "schedule": {
            "name": "weekly",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "scope": {
            "exclude_extensions": [
              "mp3",
              "mp4"
            ],
            "exclude_paths": [
              "/vol1/cold-files/",
```

```
                "/vol1/cifs/names"
              ],
              "include_extensions": [
                "vmdk",
                "mp*"
              ],
              "max_file_size": 10737418240
            }
          }
        ],
        "scanner_pools": [
          {
            "cluster": {
              "name": "cluster1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "name": "scanner-1",
            "privileged_users": [
              "cifs\\u1",
              "cifs\\u2"
            ],
            "role": "string",
            "servers": [
              "1.1.1.1",
              "10.72.204.27",
              "vmwin204-27.fsct.nb"
            ]
          }
        ],
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027259 +	A scanner-pool, an On-Access policy, or an On-Demand policy might fail to get created due to either a systematic error or some hardware failure. The error code returned details the failure along with the reason for the failure. For example, if a scanner-pool fails due to an incorrect cluster name, then the error might read: "Failed to create scanner-pool "scanner-1". Reason: "Cluster uuid points to different cluster name instead of the cluster-name supplied.". Retry the operation."
10027260 +	If a scanner-pool, an On-Access policy or an On-Demand policy specified in the input already exists, then a duplicate error is returned. For example, if a scanner-pool "scanner-1" already exists for an SVM and is again specified in the input, the error message will read: " Failed to create scanner-pool "scanner-1" as the specified entry already exists. Delete the entry and retry the POST operation."
2621462 +	The specified SVM name is invalid
2621706 +	The specified svm.uuid is either invalid or belongs to a different SVM
10027015 +	Attempting to enable a Vscan but no active scanner-pool exists for the specified SVM
10027011 +	Attempting to enable a Vscan for an SVM for which no CIFS server exists
10027023 +	Attempting to enable a Vscan for an SVM for which no active Vscan On-Access policy exist
10027086 +	DNS resolution failed for one or more hostnames
10027012 +	Cannot enable Vscan on an administrative SVM.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_access_policy

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy

Name	Type	Description
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	

schedule

Schedule of the task.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_demand_policy

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	

cluster_reference

Name	Type	Description
name	string	
uuid	string	

scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".

Name	Type	Description
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.10
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.10

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan

Vscan can be used to protect data from being compromised by viruses or other malicious code. This combines best-in-class third-party antivirus software with ONTAP features that give you the flexibility you need to control which files get scanned and when. Storage systems offload scanning operations to external servers hosting antivirus software from third-party vendors. An Antivirus Connector on the external server handles communications between the storage system and the antivirus software.

Name	Type	Description
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.
on_access_policies	array[vscan_on_access_policy]	
on_demand_policies	array[vscan_on_demand_policy]	
scanner_pools	array[scanner_pool]	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage Vscan configuration

Protocols Vscan server-status endpoint overview

Overview

This API is used to display connection status information for the external virus-scanning servers or "Vscan servers".

Examples

Retrieving all fields for the Vscan server status

```
# The API:
/api/protocols/vscan/server-status/

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/server-status?fields=*"
-H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "66f8564d-aefc-11eb-bd8c-0050568e8ed1",
      "name": "vs1"
    },
    "node": {
      "uuid": "ce2463d9-aef6-11eb-bd8c-0050568e8ed1",
      "name": "user-vsim1"
    },
    "ip": "10.140.132.141",
    "type": "primary",
    "state": "connected",
    "update_time": "2021-05-07T21:35:02+05:30",
    "vendor": "mighty master anti-evil scanner",
    "version": "5.643",
```

```
    "extended_stats": [
      "ts=10:15:28 PM May 07,2021",
      "scans=sent:0,compok:0,comperr:0,compnotfnd:0,ms/comp:0",
      "avshim-version=1.0.5.0",
      "mempage/s=0, procs=52, threads=2063, %cpu=0.22, procqlen=0,
diskio/s=0, smbbytes/s=52, ",
      "ifmac=FA:16:3E:F0:70:88,
tcpstat=retrans:7538,connfail:2137,connreset:52018,inerr:0",
      "cfg=Host Name:SCSPB2271817001",
      "OS Name:Microsoft Windows Server 2012 R2 Standard",
      "OS Version:6.3.9600 N/A Build 9600",
      "System Boot Time:5/6/2021, 9:01:42 PM",
      "System Manufacturer:RDO",
      "System Model:OpenStack Compute",
      "System Type:x64-based PC",
      "Processor(s):2 Processor(s) Installed.",
      "[01]:Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~2400 Mhz"
    ],
    "interface": {
      "name": "vs1.data",
      "uuid": "6911e7c6-aefc-11eb-bd8c-0050568e8ed1",
      "ip": {
        "address": "10.140.69.165"
      }
    }
  },
  {
    "svm": {
      "uuid": "a776e8f2-aef9-11eb-8530-0050568e8ed1",
      "name": "vs2"
    },
    "node": {
      "uuid": "ce2463d9-aef6-11eb-bd8c-0050568e8ed1",
      "name": "user-vsim1"
    },
    "ip": "10.140.128.163",
    "type": "primary",
    "state": "connected",
    "update_time": "2021-05-07T21:35:43+05:30",
    "vendor": "mighty master anti-evil scanner",
    "version": "5.643",
    "extended_stats": [
      "ts=10:15:26 PM May 07,2021",
      "scans=sent:0,compok:0,comperr:0,compnotfnd:0,ms/comp:0",
      "avshim-version=1.0.5.0",
      "mempage/s=0, procs=46, threads=1947, %cpu=0.07, procqlen=0,
```

```
diskio/s=1, smbbytes/s=181, ",
      "ifmac=FA:16:3E:06:9F:D6,
tcpstat=retrans:123453,connfail:6864,connreset:13188,inerr:0",
      "cfg=Host Name:SCSPB2271815001",
      "OS Name:Microsoft Windows Server 2012 R2 Standard",
      "OS Version:6.3.9600 N/A Build 9600",
      "System Boot Time:4/20/2021, 5:23:29 PM",
      "System Manufacturer:RDO",
      "System Model:OpenStack Compute",
      "System Type:x64-based PC",
      "Processor(s):2 Processor(s) Installed.",
      "[01]:Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~2400 Mhz"
    ],
    "interface": {
      "name": "vs2.data",
      "uuid": "c070b4c2-aef9-11eb-8530-0050568e8ed1",
      "ip": {
        "address": "10.140.70.154"
      }
    }
  }
],
"num_records": 2
}
```

Retrieving the server status information for the server with IP address 10.141.46.173

```
# The API:
/api/protocols/vscan/server-status

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/server-
status?ip=10.140.132.141&fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "66f8564d-aefc-11eb-bd8c-0050568e8ed1",
      "name": "vs1"
    },
```

```
    "node": {
      "uuid": "ce2463d9-aef6-11eb-bd8c-0050568e8ed1",
      "name": "user-vsim1"
    },
    "ip": "10.140.132.141",
    "type": "primary",
    "state": "connected",
    "update_time": "2021-05-07T23:08:21+05:30",
    "vendor": "mighty master anti-evil scanner",
    "version": "5.643",
    "extended_stats": [
      "ts=12:07:30 AM May 08,2021",
      "scans=sent:0,compok:0,comperr:0,compnotfnd:0,ms/comp:0",
      "avshim-version=1.0.5.0",
      "mempage/s=0, procs=52, threads=2108, %cpu=0.07, procqlen=0,
diskio/s=0, smbbytes/s=230, ",
      "ifmac=FA:16:3E:F0:70:88,
tcpstat=retrans:8249,connfail:2174,connreset:52243,inerr:0",
      "cfg=Host Name:SCSPB2271817001",
      "OS Name:Microsoft Windows Server 2012 R2 Standard",
      "OS Version:6.3.9600 N/A Build 9600",
      "System Boot Time:5/6/2021, 9:01:42 PM",
      "System Manufacturer:RDO",
      "System Model:OpenStack Compute",
      "System Type:x64-based PC",
      "Processor(s):2 Processor(s) Installed.",
      "[01]:Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~2400 Mhz"
    ],
    "interface": {
      "name": "vs1.data",
      "uuid": "6911e7c6-aefc-11eb-bd8c-0050568e8ed1",
      "ip": {
        "address": "10.140.69.165"
      }
    }
  }
],
"num_records": 1
}
```

Retrieve the Vscan server status

GET `/protocols/vscan/server-status`

Introduced In: 9.6

Retrieves a Vscan server status.

Related ONTAP commands

- `vserver vscan connection-status show-all`

Learn more

- DOC /protocols/vscan/server-status

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
type	string	query	False	Filter by type
version	string	query	False	Filter by version
interface.name	string	query	False	Filter by interface.name • Introduced in: 9.10
interface.ip.address	string	query	False	Filter by interface.ip.address • Introduced in: 9.10
interface.uuid	string	query	False	Filter by interface.uuid • Introduced in: 9.10
ip	string	query	False	Filter by ip
disconnected_reason	string	query	False	Filter by disconnected_reason
update_time	string	query	False	Filter by update_time
state	string	query	False	Filter by state

Name	Type	In	Required	Description
vendor	string	query	False	Filter by vendor
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[vscan_server_status]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "disconnected_reason": "string",
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ip": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
        },
        "type": "string",
        "update_time": "string",
        "vendor": "string",
        "version": "string"
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Address of the interface used for the Vscan connection.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_server_status

Displays the connection status information of the external virus-scanning servers.

Name	Type	Description
disconnected_reason	string	Specifies the server disconnected reason. The following is a list of the possible reasons: • unknown - Disconnected, unknown reason. • vscan_disabled - Disconnected, Vscan is disabled on the SVM. • no_data_lif - Disconnected, SVM does not have data LIF. • session_uninitialized - Disconnected, session is not initialized. • remote_closed - Disconnected, server has closed the connection. • invalid_protocol_msg - Disconnected, invalid protocol message received. • invalid_session_id - Disconnected, invalid session ID received. • inactive_connection - Disconnected, no activity on connection. • invalid_user - Connection request by an invalid user. • server_removed - Disconnected, server has been removed from the active Scanners List. enum: • unknown • vscan_disabled • no_data_lif • session_uninitialized • remote_closed • invalid_protocol_msg • invalid_session_id • inactive_connection • invalid_user • server_removed

Name	Type	Description
interface	interface	Address of the interface used for the Vscan connection.
ip	string	IP address of the Vscan server.
node	node	
state	string	Specifies the server connection state indicating if it is in the connected or disconnected state. The following is a list of the possible states: • connected - Connected • disconnected - Disconnected enum: • connected • disconnected
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Server type. The possible values are: • primary - Primary server • backup - Backup server
update_time	string	Specifies the time the server is in the connected or disconnected state.
vendor	string	Name of the connected virus-scanner vendor.
version	string	Version of the connected virus-scanner.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a Vscan configuration

DELETE `/protocols/vscan/{svm.uuid}`

Introduced In: 9.6

Deletes a Vscan configuration.

Important notes:

- The Vscan DELETE endpoint deletes all of the Vscan configuration of an SVM. It first disables the Vscan and then deletes all of the SVM scanner-pools, On-Access policies, and On-Demand policies.
- Disable the active Vscan On-Access policy on an SVM before performing the Vscan delete operation on that SVM.

Related ONTAP commands

- `vserver vscan scanner-pool delete`
- `vserver vscan on-access-policy delete`
- `vserver vscan on-demand-policy delete`

Learn more

- DOC /protocols/vscan
- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027259 +	A scanner-pool, an On-Access policy, or an On-Demand policy might fail to get deleted due to either a systematic error or some hardware failure. The error code returned details the failure along with the reason for the failure. For example, "Failed to delete On-Access policy "sp1". Reason: "Failed to delete policy. Reason: policy must be disabled before being deleted.". Retry the operation."

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the Vscan configuration for an SVM

GET `/protocols/vscan/{svm.uuid}`

Introduced In: 9.6

Retrieves the Vscan configuration for a specified SVM.
This includes scanner-pools, On-Access policies, On-Demand policies, and information about whether a Vscan is enabled or disabled on an SVM.

Important note:

- You can enable only one Vscan configuration at a time for an SVM.

Related ONTAP commands

- `vserver vscan show`
- `vserver vscan scanner-pool show`
- `vserver vscan scanner-pool servers show`
- `vserver vscan scanner-pool privileged-users show`
- `vserver vscan on-access-policy show`
- `vserver vscan on-access-policy file-ext-to-exclude show`
- `vserver vscan on-access-policy file-ext-to-include show`

- `vserver vscan on-access-policy paths-to-exclude show`
- `vserver vscan on-demand-task show`

Learn more

- DOC /protocols/vscan
- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.
on_access_policies	array[vscan_on_access_policy]	
on_demand_policies	array[vscan_on_demand_policy]	
scanner_pools	array[scanner_pool]	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "on_access_policies": [
    {
      "name": "on-access-test",
      "scope": {
        "exclude_extensions": [
          "mp*",
          "txt"
        ],
        "exclude_paths": [
          "\\dir1\\dir2\\name",
          "\\vol\\a b",
          "\\vol\\a,b\\"
        ],
        "include_extensions": [
          "mp*",
          "txt"
        ],
        "max_file_size": 2147483648
      }
    }
  ],
  "on_demand_policies": [
    {
      "log_path": "/vol0/report_dir",
      "name": "task-1",
      "scan_paths": [
        "/vol1/",
        "/vol2/cifs/"
      ],
      "schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
```

```
      "scope": {
        "exclude_extensions": [
          "mp3",
          "mp4"
        ],
        "exclude_paths": [
          "/vol1/cold-files/",
          "/vol1/cifs/names"
        ],
        "include_extensions": [
          "vmdk",
          "mp*"
        ],
        "max_file_size": 10737418240
      }
    }
  ],
  "scanner_pools": [
    {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "scanner-1",
      "privileged_users": [
        "cifs\\u1",
        "cifs\\u2"
      ],
      "role": "string",
      "servers": [
        "1.1.1.1",
        "10.72.204.27",
        "vmwin204-27.fsct.nb"
      ]
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
```

```
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_access_policy

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy

Name	Type	Description
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	

schedule

Schedule of the task.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_demand_policy

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	

cluster_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".

Name	Type	Description
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.10
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.10

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the Vscan configuration for an SVM

PATCH `/protocols/vscan/{svm.uuid}`

Introduced In: 9.6

Updates the Vscan configuration of an SVM. Allows you to either enable or disable a Vscan, and allows you to clear the Vscan cache that stores the past scanning data for an SVM.

Important note:

- The Vscan PATCH endpoint does not allow you to modify scanner-pools, On-Demand policies or On-Access policies. Those modifications can only be done through their respective endpoints.

Related ONTAP commands

- `vserver vscan enable`
- `vserver vscan disable`
- `vserver vscan reset`

Learn more

- DOC /protocols/vscan
- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027015 +	Attempting to enable a Vscan but no active scanner-pool exists for the specified SVM
10027009 +	Attempting to enable a Vscan for an SVM for which it's already enabled
10027010 +	Attempting to disable a Vscan for an SVM for which it's already disabled
10027011 +	Attempting to enable a Vscan for an SVM for which no CIFS server exists

Error Code	Description
10027023 +	Attempting to enable a Vscan for an SVM for which no active Vscan On-Access policy exists
10027012 +	Cannot enable Vscan on an administrative SVM.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_access_policy

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy

Name	Type	Description
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
scope	scope	

schedule

Schedule of the task.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

vscan_on_demand_policy

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.

Name	Type	Description
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	

cluster_reference

Name	Type	Description
name	string	
uuid	string	

scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.10

Name	Type	Description
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.10

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan

Vscan can be used to protect data from being compromised by viruses or other malicious code. This combines best-in-class third-party antivirus software with ONTAP features that give you the flexibility you need to control which files get scanned and when. Storage systems offload scanning operations to external servers hosting antivirus software from third-party vendors. An Antivirus Connector on the external server handles communications between the storage system and the antivirus software.

Name	Type	Description
cache_clear	boolean	Discards the cached information of the files that have been successfully scanned. Once the cache is cleared, files are scanned again when they are accessed. PATCH only
enabled	boolean	Specifies whether or not Vscan is enabled on the SVM.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve Vscan events

GET `/protocols/vscan/{svm.uuid}/events`

Introduced In: 9.11

Retrieves Vscan events, which are generated by the cluster to capture important events.

Related ONTAP commands

- `vserver vscan show-events`

Parameters

Name	Type	In	Required	Description
version	string	query	False	Filter by version
server	string	query	False	Filter by server
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
event_time	string	query	False	Filter by event_time
interface.name	string	query	False	Filter by interface.name
interface.ip.address	string	query	False	Filter by interface.ip.address
interface.uuid	string	query	False	Filter by interface.uuid
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
file_path	string	query	False	Filter by file_path
disconnect_reason	string	query	False	Filter by disconnect_reason
vendor	string	query	False	Filter by vendor
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[vscan_event]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "disconnect_reason": "string",
      "event_time": "2021-11-24 23:29:41 -0500",
      "file_path": "/1",
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "server": "192.168.1.1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
```

```
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "type": "string",
        "vendor": "mighty master anti-evil scanner",
        "version": "1.0"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Address of the interface used for the Vscan connection.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_event

Name	Type	Description
disconnect_reason	string	Specifies the reason of the Vscan server disconnection. The available values are: • na Not applicable • vscan_disabled Vscan disabled on the SVM • no_data_lif SVM does not have data lif on the node • session_uninitialized Session not initialized • remote_closed Closure from Server • invalid_protocol_msg Invalid protocol-message received • invalid_session_id Invalid session-id received • inactive_connection No activity on connection • invalid_user Connection request by invalid user • server_removed Server removed from the active scanner-pool
event_time	string	Specifies the Timestamp of the event.
file_path	string	Specifies the file for which event happened.
interface	interface	Address of the interface used for the Vscan connection.
node	node	
server	string	Specifies the IP address of the Vscan server.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the event type.
vendor	string	Specifies the scan-engine vendor.

Name	Type	Description
version	string	Specifies the scan-engine version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Vscan On-Access policies

Protocols Vscan svm.uuid on-access-policies endpoint overview

Overview

Use Vscan On-Access scanning to actively scan file objects for viruses when clients access files over SMB. To control which file operations trigger a vscan, use Vscan File-Operations Profile (vscan-fileop-profile) option in the CIFS share. The Vscan On-Access policy configuration defines the scope and status of On-Access scanning on file objects. Use this API to retrieve and manage Vscan On-Access policy configurations and Vscan On-Access policy statuses for the SVM.

Examples

Retrieving all fields for all policies of an SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies/

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/{svm.uuid}/on-access-
policies?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "name": "default_CIFS",
    "enabled": true,
    "mandatory": true,
    "scope": {
      "max_file_size": 2147483648,
      "include_extensions": [
        "*"
      ],
      "scan_without_extension": true,
      "scan_readonly_volumes": false,
      "only_execute_access": false
    },
    "_links": {
      "self": {
        "href": "/api/protocols/vscan/179d3c85-7053-11e8-b9b8-
005056b41bd1/on-access-policies/default_CIFS"
      }
    }
  },
  {
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "name": "on-access-policy",
```

```
    "enabled": false,
    "mandatory": true,
    "scope": {
      "max_file_size": 3221225472,
      "exclude_paths": [
        "\\vol\\a b\\",
        "\\vol\\a,b\\"
      ],
      "include_extensions": [
        "mp*",
        "tx*"
      ],
      "exclude_extensions": [
        "mp3",
        "txt"
      ],
      "scan_without_extension": true,
      "scan_readonly_volumes": false,
      "only_execute_access": true
    },
    "_links": {
      "self": {
        "href": "/api/protocols/vscan/179d3c85-7053-11e8-b9b8-
005056b41bd1/on-access-policies/on-access-policy"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/vscan/179d3c85-7053-11e8-b9b8-005056b41bd1/on-
access-policies?fields=*"
  }
}
}
```


Retrieving the specific On-Access policy associated with the specified SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies/{name}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/179d3c85-7053-11e8-
b9b8-005056b41bd1/on-access-policies/on-access-policy" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"name": "on-access-policy",
"enabled": true,
"mandatory": true,
"scope": {
  "max_file_size": 3221225472,
  "exclude_paths": [
    "\\vol\\a b\\",
    "\\vol\\a,b\\"
  ],
  "include_extensions": [
    "mp*",
    "tx*"
  ],
  "exclude_extensions": [
    "mp3",
    "txt"
  ],
  "scan_without_extension": true,
  "scan_readonly_volumes": false,
  "only_execute_access": true
},
"_links": {
  "self": {
    "href": "/api/protocols/vscan/179d3c85-7053-11e8-b9b8-005056b41bd1/on-
access-policies/task1"
  }
}
}
```

Creating a Vscan On-Access policy

The Vscan On-Access policy POST endpoint creates an On-Access policy for the specified SVM. Set enabled to "true" to enable scanning on the created policy.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-access-policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
false, \"mandatory\": true, \"name\": \"on-access-policy\", \"scope\": {
\"exclude_extensions\": [ \"txt\", \"mp3\" ], \"exclude_paths\": [
\"\\\\dir1\\\\dir2\\\\ame\", \"\\\\vol\\\\a b\" ], \"include_extensions\":
[  \"mp*\", \"txt\" ], \"max_file_size\": 3221225472,
\"only_execute_access\": true, \"scan_readonly_volumes\": false,
\"scan_without_extension\": true }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "name": "on-access-policy",
    "enabled": false,
    "mandatory": true,
    "scope": {
      "max_file_size": 3221225472,
      "exclude_paths": [
        "\\dir1\\dir2\\ame",
        "\\vol\\a b"
      ],
      "include_extensions": [
        "mp*",
        "txt"
      ],
      "exclude_extensions": [
        "txt",
        "mp3"
      ],
      "scan_without_extension": true,
      "scan_readonly_volumes": false,
      "only_execute_access": true
```

```
    }
  }
]
}
```

Creating a Vscan On-Access policy where a number of optional fields are not specified

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-access-policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
false, \"mandatory\": true, \"name\": \"on-access-policy\", \"scope\": {
\"exclude_paths\": [ \"\\\\vol\\\\a b\", \"\\\\vol\\\\a,b\\\\\" ],
\"max_file_size\": 1073741824, \"scan_without_extension\": true }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "name": "on-access-policy",
    "enabled": false,
    "mandatory": true,
    "scope": {
      "max_file_size": 1073741824,
      "exclude_paths": [
        "\\vol\\a b",
        "\\vol\\a,b\\"
      ],
      "scan_without_extension": true
    }
  }
]
}
```

Updating a Vscan On-Access policy

The policy being modified is identified by the UUID of the SVM and the policy name.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-access-policies/on-access-policy" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"scope\":
{ \"include_extensions\": [ \"txt\" ], \"only_execute_access\": true,
\"scan_readonly_volumes\": false, \"scan_without_extension\": true }}"
```

Deleting a Vscan On-Access policy

The policy to be deleted is identified by the UUID of the SVM and the policy name.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-access-policies/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-access-policies/on-access-policy" -H "accept:
application/hal+json"
```

Retrieve a Vscan On-Access policy

GET `/protocols/vscan/{svm.uuid}/on-access-policies`

Introduced In: 9.6

Retrieves the Vscan On-Access policy.

Related ONTAP commands

- `vserver vscan on-access-policy show`
- `vserver vscan on-access-policy file-ext-to-include show`
- `vserver vscan on-access-policy file-ext-to-exclude show`
- `vserver vscan on-access-policy paths-to-exclude show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-access-policies

Parameters

Name	Type	In	Required	Description
mandatory	boolean	query	False	Filter by mandatory
scope.exclude_paths	string	query	False	Filter by scope.exclude_paths • maxLength: 255 • minLength: 1
scope.scan_without_extension	boolean	query	False	Filter by scope.scan_without_extension
scope.max_file_size	integer	query	False	Filter by scope.max_file_size • Max value: 1099511627776 • Min value: 1024
scope.only_execute_access	boolean	query	False	Filter by scope.only_execute_access
scope.exclude_extensions	string	query	False	Filter by scope.exclude_extensions
scope.include_extensions	string	query	False	Filter by scope.include_extensions
scope.scan_readonly_volumes	boolean	query	False	Filter by scope.scan_readonly_volumes
name	string	query	False	Filter by name • maxLength: 256 • minLength: 1

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.16
enabled	boolean	query	False	Filter by enabled
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[vscan_on_access]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "name": "on-access-test",
      "scope": {
        "exclude_extensions": [
          "mp*",
          "txt"
        ],
        "exclude_paths": [
          "\\dir1\\dir2\\name",
          "\\vol\\a b",
          "\\vol\\a,b\\"
        ],
        "include_extensions": [
          "mp*",
          "txt"
        ],
        "max_file_size": 2147483648
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_access

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a Vscan On-Access policy

POST `/protocols/vscan/{svm.uuid}/on-access-policies`

Introduced In: 9.6

Creates a Vscan On-Access policy.
Important notes:

- You must enable the policy on an SVM before its files can be scanned.
- You can enable only one On-Access policy at a time on an SVM. By default, the policy is enabled on creation. * If the Vscan On-Access policy has been created successfully on an SVM but cannot be enabled due to an error, the Vscan On-Access policy configurations are saved. The Vscan On-Access policy is then enabled using the PATCH operation.

Required properties

- `svm.uuid` - Existing SVM in which to create the Vscan On-Access policy.
- `name` - Name of the Vscan On-Access policy. Maximum length is 256 characters.

Default property values

If not specified in POST, the following default property values are assigned:

- `enabled` - *true*
- `mandatory` - *true*
- `include_extensions` - *
- `max_file_size` - *2147483648*
- `only_execute_access` - *false*
- `scan_readonly_volumes` - *false*
- `scan_without_extension` - *true*

Related ONTAP commands

- `vserver vscan on-access-policy create`
- `vserver vscan on-access-policy enable`

- `vserver vscan on-access-policy disable`
- `vserver vscan on-access-policy file-ext-to-include add`
- `vserver vscan on-access-policy file-ext-to-exclude add`
- `vserver vscan on-access-policy paths-to-exclude add`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-access-policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "name": "on-access-test",
  "scope": {
    "exclude_extensions": [
      "mp*",
      "txt"
    ],
    "exclude_paths": [
      "\\dir1\\dir2\\name",
      "\\vol\\a b",
      "\\vol\\a,b\\"
    ],
    "include_extensions": [
      "mp*",
      "txt"
    ],
    "max_file_size": 2147483648
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[vscan_on_access]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "name": "on-access-test",
      "scope": {
        "exclude_extensions": [
          "mp*",
          "txt"
        ],
        "exclude_paths": [
          "\\dir1\\dir2\\name",
          "\\vol\\a b",
          "\\vol\\a,b\\"
        ],
        "include_extensions": [
          "mp*",
          "txt"
        ],
        "max_file_size": 2147483648
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027043	The new On-Access policy cannot be created because the SVM has reached the maximum limit of 10 On-Access policies. Delete an existing policy in order to create a new policy
10027101	The file size must be in the range 1KB to 1TB
10027107	The include extensions list cannot be empty. Specify at least one extension for inclusion
10027109	The specified CIFS path is invalid. It must be in the form "\dir1\dir2" or "\dir1\dir2\"
10027249	The On-Access policy created successfully but failed to enable the policy. The reason for enable policy operation failure might be that another policy is enabled. Disable the enabled policy and then enable the newly created policy using the PATCH operation
10027253	The number of paths specified exceeds the configured number of maximum paths. You cannot specify more than the maximum number of configured paths
10027254	The number of extensions specified exceeds the configured maximum number of extensions. You cannot specify more than the maximum number of configured extensions

Definitions

See Definitions

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_access

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an antivirus On-Access policy configuration

DELETE `/protocols/vscan/{svm.uuid}/on-access-policies/{name}`

Introduced In: 9.6

Deletes the anti-virus On-Access policy configuration.

Related ONTAP commands

- `vserver vscan on-access-policy delete`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-access-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027034	An On-Access policy associated with a data SVM which was created by SVM owned by the cluster cannot be deleted.
10027040	An On-Access policy with a status enabled cannot be deleted. Disable the policy and then delete the policy.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the Vscan On-Access policy configuration for an SVM

GET `/protocols/vscan/{svm.uuid}/on-access-policies/{name}`

Introduced In: 9.6

Retrieves the Vscan On-Access policy configuration of an SVM.

Related ONTAP commands

- `vserver vscan on-access-policy show`
- `vserver vscan on-access-policy file-ext-to-include show`
- `vserver vscan on-access-policy file-ext-to-exclude show`
- `vserver vscan on-access-policy paths-to-exclude show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-access-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
name	string	On-Access policy name
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "name": "on-access-test",
  "scope": {
    "exclude_extensions": [
      "mp*",
      "txt"
    ],
    "exclude_paths": [
      "\\dir1\\dir2\\name",
      "\\vol\\a b",
      "\\vol\\a,b\\"
    ],
    "include_extensions": [
      "mp*",
      "txt"
    ],
    "max_file_size": 2147483648
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the Vscan On-Access policy configuration for an SVM

PATCH `/protocols/vscan/{svm.uuid}/on-access-policies/{name}`

Introduced In: 9.6

Updates the Vscan On-Access policy configuration and/or enables/disables the Vscan On-Access policy of an SVM. You cannot modify the configurations for an On-Access policy associated with a data SVM which was created by SVM owned by the cluster, although you can enable and disable the policy associated with cluster SVM.

Related ONTAP commands

- `vserver vscan on-access-policy modify`
- `vserver vscan on-access-policy enable`
- `vserver vscan on-access-policy disable`

- `vserver vscan on-access-policy file-ext-to-include add`
- `vserver vscan on-access-policy file-ext-to-exclude add`
- `vserver vscan on-access-policy paths-to-exclude add`
- `vserver vscan on-access-policy file-ext-to-include remove`
- `vserver vscan on-access-policy file-ext-to-exclude remove`
- `vserver vscan on-access-policy paths-to-exclude remove`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-access-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "scope": {
    "exclude_extensions": [
      "mp*",
      "txt"
    ],
    "exclude_paths": [
      "\\dir1\\dir2\\name",
      "\\vol\\a b",
      "\\vol\\a,b\\"
    ],
    "include_extensions": [
      "mp*",
      "txt"
    ],
    "max_file_size": 2147483648
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027033	Configurations for an On-Access policy associated with a data SVM which was created by SVM owned by the cluster cannot be modified. However, the policy can be enabled or disabled.

Error Code	Description
10027046	The specified SVM is not the owner of the specified policy. Check for the correct SVM who owns the policy.
10027101	The file size must be in the range 1KB to 1TB
10027107	The include extensions list cannot be empty. Specify at least one extension for inclusion.
10027109	The specified CIFS path is invalid. It must be in the form "\dir1\dir2" or "\dir1\dir2\".
10027249	The On-Access policy updated successfully but failed to enable/disable the policy. The reason for an enable policy operation failure might be that another policy is enabled. Disable the already enabled policy and then enable the policy. The reason for a disable policy operation failure might be that Vscan is enabled on the SVM. Disable the Vscan first and then disable the policy.
10027250	The On-Access policy cannot be enabled/disabled. The reason for an enable policy operation failure might be that another policy is enabled. Disable the already enabled policy and then enable the policy. The reason for a disable policy operation failure might be that Vscan is enabled on the SVM. Disable the Vscan and then disable the policy.
10027253	The number of paths specified exceeds the configured maximum number of paths. You cannot specify more than the maximum number of configured paths.
10027254	The number of extensions specified exceeds the configured maximum number of extensions. You cannot specify more than the maximum number of configured extensions.

Definitions

See Definitions

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
only_execute_access	boolean	Scan only files opened with execute-access.
scan_readonly_volumes	boolean	Specifies whether or not read-only volume can be scanned.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_access

An On-Access policy that defines the scope of an On-Access scan. Use On-Access scanning to check for viruses when clients open, read, rename, or close files over CIFS. By default, ONTAP creates an On-Access policy named "default_CIFS" and enables it for all the SVMs in a cluster.

Name	Type	Description
enabled	boolean	Status of the On-Access Vscan policy
mandatory	boolean	Specifies if scanning is mandatory. File access is denied if there are no external virus-scanning servers available for virus scanning.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Vscan On-Demand policies

Protocols Vscan svm.uuid on-demand-policies endpoint overview

Overview

Vscan On-Demand scanning is used to check files for viruses on a schedule. For example, it can be used to run scans only in off-peak hours, or to scan very large files that are excluded from an on-access scan. Vscan On-Demand scanning can be used for any path in the SVM namespace.

Vscan On-Demand policy configurations define the scope of a Vscan On-Demand scan. The schedule parameter in the On-Demand policy configuration decides when to execute the task. Schedule can be created using the /api/clusters/schedule endpoint and can be assigned on policy create or policy modify. This API is used to retrieve and manage Vscan On-Demand policy configurations. It is also used to schedule the Vscan On-Demand scan.

Examples

Retrieving all fields for all policies of an SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies/

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/{svm.uuid}/on-demand-
policies?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "86fbc414-f140-11e8-8e22-0050568e0945",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/86fbc414-f140-11e8-8e22-0050568e0945"
        }
      }
    },
    "name": "on-demand-policy1",
    "scan_paths": [
      "/vol1/",
      "/vol2/cifs/"
    ],
    "log_path": "/vol0/report_dir",
    "schedule": {
      "uuid": "f6d0843e-f159-11e8-8e22-0050568e0945",
      "name": "schedule",
      "_links": {
        "self": {
```

```
          "href": "/api/cluster/schedules/f6d0843e-f159-11e8-8e22-
0050568e0945"
        }
      }
    },
    "scope": {
      "max_file_size": 10737418240,
      "exclude_paths": [
        "/vol1/cold-files/",
        "/vol1/cifs/names"
      ],
      "include_extensions": [
        "vmdk",
        "mp*"
      ],
      "exclude_extensions": [
        "mp3",
        "mp4"
      ],
      "scan_without_extension": false
    },
    "_links": {
      "self": {
        "href": "/api/protocols/vscan/86fbc414-f140-11e8-8e22-
0050568e0945/on-demand-policies/policy1"
      }
    }
  },
  {
    "svm": {
      "uuid": "86fbc414-f140-11e8-8e22-0050568e0945",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/86fbc414-f140-11e8-8e22-0050568e0945"
        }
      }
    },
    "name": "on-demand-policy2",
    "scan_paths": [
      "/vol1/",
      "/vol2/cifs/"
    ],
    "log_path": "/report",
    "scope": {
      "max_file_size": 10737418240,
```

```
      "include_extensions": [
        "mp*"
      ],
      "scan_without_extension": true
    },
    "_links": {
      "self": {
        "href": "/api/protocols/vscan/86fbc414-f140-11e8-8e22-
0050568e0945/on-demand-policies/policy2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/vscan/86fbc414-f140-11e8-8e22-0050568e0945/on-
demand-policies?fields=*"
  }
}
}
```


Retrieving a specific On-Demand policy associated with a specified SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-demand-policies/on-demand-task" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "86fbc414-f140-11e8-8e22-0050568e0945",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/86fbc414-f140-11e8-8e22-0050568e0945"
    }
  }
},
"name": "on-demand-policy",
"scan_paths": [
  "/vol1/cifs"
],
"log_path": "/report",
"scope": {
  "max_file_size": 10737418240,
  "include_extensions": [
    "vmdk",
    "mp*"
  ],
  "scan_without_extension": true
},
"_links": {
  "self": {
    "href": "/api/protocols/vscan/86fbc414-f140-11e8-8e22-0050568e0945/on-
demand-policies/policy2"
  }
}
}
```

Creating a Vscan On-Demand policy

The Vscan On-Demand policy POST endpoint creates an On-Demand policy for the specified SVM. Specify the schedule parameter to schedule an On-Demand scan.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-demand-policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"log_path\":
\"/vol0/report_dir\", \"name\": \"on-demand-policy\", \"scan_paths\": [
\"/vol1/\", \"/vol2/cifs/\" ], \"schedule\": { \"name\": \"weekly\",
\"uuid\": \"1cd8a442-86d1-11e0-ae1c-123478563412\" }, \"scope\": {
\"exclude_extensions\": [ \"mp3\" ], \"exclude_paths\": [ \"/vol/cold-
files/\" ], \"include_extensions\": [ \"vmdk\", \"mp*\" ],
\"max_file_size\": 1073741824, \"scan_without_extension\": true }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "name": "on-demand-policy",
    "scan_paths": [
      "/vol1/",
      "/vol2/cifs/"
    ],
    "log_path": "/vol0/report_dir",
    "schedule": {
      "name": "weekly"
    },
    "scope": {
      "max_file_size": 1073741824,
      "exclude_paths": [
        "/vol/cold-files/"
      ],
      "include_extensions": [
        "vmdk",
        "mp*"
      ],
      "exclude_extensions": [
        "mp3"
      ],
      "scan_without_extension": true
    }
```

```
  }
]
}
```

Creating a Vscan On-Demand policy where a number of optional fields are not specified

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-demand-policies?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"log_path\":
\"/report\", \"name\": \"on-demand-policy\", \"scan_paths\": [
\"/vol1/cifs/\" ], \"scope\": { \"include_extensions\": [ \"mp*\" ],
\"scan_without_extension\": true }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "name": "on-demand-policy",
    "scan_paths": [
      "vol1/cifs/"
    ],
    "log_path": "/report",
    "scope": {
      "max_file_size": 10737418240,
      "include_extensions": [
        "vmdk",
        "mp*"
      ],
      "scan_without_extension": true
    }
  }
]
}
```

Updating a Vscan On-Demand policy

The policy being modified is identified by the UUID of the SVM and the policy name.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-demand-policies/on-demand-policy" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"schedule\":
{ \"name\": \"weekly\" }, \"scope\": { \"exclude_extensions\": [ \"mp3\"
], \"exclude_paths\": [ \"/vol/\" ], \"include_extensions\": [ \"vmdk\",
\"mp3\" ], \"scan_without_extension\": true }}"
```

Deleting a Vscan On-Demand policy

The policy to be deleted is identified by the UUID of the SVM and the policy name.

```
# The API:
/api/protocols/vscan/{svm.uuid}/on-demand-policies/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/vscan/86fbc414-f140-11e8-
8e22-0050568e0945/on-demand-policies/on-demand-policy" -H "accept:
application/hal+json"
```

Retrieve a Vscan On-Demand policy

GET `/protocols/vscan/{svm.uuid}/on-demand-policies`

Introduced In: 9.6

Retrieves the Vscan On-Demand policy.

Related ONTAP commands

- `vserver vscan on-demand-task show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-demand-policies

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.10
log_path	string	query	False	Filter by log_path
scope.max_file_size	integer	query	False	Filter by scope.max_file_size • Max value: 1099511627776 • Min value: 1024
scope.exclude_paths	string	query	False	Filter by scope.exclude_paths • maxLength: 255 • minLength: 1
scope.scan_without_extension	boolean	query	False	Filter by scope.scan_without_extension
scope.exclude_extensions	string	query	False	Filter by scope.exclude_extensions
scope.include_extensions	string	query	False	Filter by scope.include_extensions
name	string	query	False	Filter by name • maxLength: 256 • minLength: 1
schedule.uuid	string	query	False	Filter by schedule.uuid
schedule.name	string	query	False	Filter by schedule.name
scan_paths	string	query	False	Filter by scan_paths

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of records
records	array[vscan_on_demand]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "log_path": "/vol0/report_dir",
      "name": "task-1",
      "scan_paths": [
        "/vol1/",
        "/vol2/cifs/"
      ],
      "schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scope": {
        "exclude_extensions": [
          "mp3",
          "mp4"
        ],
        "exclude_paths": [
          "/vol1/cold-files/",
          "/vol1/cifs/names"
        ],
        "include_extensions": [
          "vmdk",
          "mp*"
        ],
        "max_file_size": 10737418240
      },
      "svm": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

schedule

Schedule of the task.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.

Name	Type	Description
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_demand

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a Vscan On-Demand policy

POST `/protocols/vscan/{svm.uuid}/on-demand-policies`

Introduced In: 9.6

Creates a Vscan On-Demand policy. Created only on a data SVM.

Important notes:

- Only one policy can be scheduled at a time on an SVM. Use schedule name or schedule uuid to schedule an On-Demand policy.
- Scanning must be enabled on the SVM before the policy is scheduled to run.
- The exclude_extensions setting overrides the include_extensions setting. Set scan_without_extension to true to scan files without extensions.

Required properties

- `svm.uuid` - Existing SVM in which to create the Vscan On-Demand policy.
- `name` - Name of the Vscan On-Demand policy. Maximum length is 256 characters.
- `log_path` - Path from the Vserver root where the On-Demand policy report is created.
- `scan_paths` - List of paths that need to be scanned.

Recommended optional properties

- `schedule` - Scan schedule. It is recommended to set the schedule property, as it dictates when to scan for viruses.

Default property values

If not specified in POST, the following default property values are assigned:

- `include_extensions` - *
- `max_file_size` - *10737418240*
- `scan_without_extension` - *true*

Related ONTAP commands

- `vserver vscan on-demand-task create`
- `vserver vscan on-demand-task schedule`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-demand-policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "log_path": "/vol0/report_dir",
  "name": "task-1",
  "scan_paths": [
    "/vol1/",
    "/vol2/cifs/"
  ],
  "schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": {
    "exclude_extensions": [
      "mp3",
      "mp4"
    ],
    "exclude_paths": [
      "/vol1/cold-files/",
      "/vol1/cifs/names"
    ],
    "include_extensions": [
      "vmdk",
      "mp*"
    ],
    "max_file_size": 10737418240
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[vscan_on_demand]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "log_path": "/vol0/report_dir",
      "name": "task-1",
      "scan_paths": [
        "/vol1/",
        "/vol2/cifs/"
      ],
      "schedule": {
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scope": {
        "exclude_extensions": [
          "mp3",
          "mp4"
        ],
        "exclude_paths": [
          "/vol1/cold-files/",
          "/vol1/cifs/names"
        ],
        "include_extensions": [
          "vmdk",
          "mp*"
        ],
        "max_file_size": 10737418240
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027101	The file size must be in the range 1KB to 1TB
10027107	The include extensions list cannot be empty. Specify at least one extension for inclusion.
10027164	An On-Demand policy cannot be scheduled, as the Vscan is disabled. Enable the Vscan and retry the operation.
10027167	The specified schedule does not exist. Create the schedule or create a policy without specifying the schedule.
10027168	The specified scan path does not exist. The scan path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use “/” not “\”)
10027169	The specified scan path is not supported for scanning.
10027173	The new On-Demand policy cannot be created because the SVM has reached the maximum limit of 10 On-Demand policies. Delete an existing policy in order to create a new policy.
10027174	The specified exclude path is invalid. The path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use "/" not "\")
10027175	An On-Demand policy cannot be scheduled as the Vserver is not in an operational state.
10027176	The log-path specified does not exist. The log path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use “/” not “\”).
10027177	The log path specified is not supported.

| 10027178 | The specified task-name is invalid. Valid characters are 0-9, A-Z, a-z, "_", ".", and "-"
10027253	The number of paths specified exceeds the configured maximum number of paths. You cannot specify more than the maximum number of configured paths.
10027254	The number of extensions specified exceeds the configured maximum number of extensions. You cannot specify more than the maximum number of configured extensions.
10027255	Another policy is already scheduled. Only one policy per SVM is allowed to be scheduled at any one time. Create a policy without specifying a schedule.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Schedule of the task.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_demand

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a Vscan On-Demand configuration

DELETE `/protocols/vscan/{svm.uuid}/on-demand-policies/{name}`

Introduced In: 9.6

Deletes the Vscan On-Demand configuration.

Related ONTAP commands

- `vserver vscan on-demand-task delete`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-demand-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the Vscan On-Demand configuration for an SVM

GET `/protocols/vscan/{svm.uuid}/on-demand-policies/{name}`

Introduced In: 9.6

Retrieves the Vscan On-Demand configuration of an SVM.

Related ONTAP commands

- `vserver vscan on-demand-task show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-demand-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
name	string	On-Demand task name
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "log_path": "/vol0/report_dir",
  "name": "task-1",
  "scan_paths": [
    "/vol1/",
    "/vol2/cifs/"
  ],
  "schedule": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": {
    "exclude_extensions": [
      "mp3",
      "mp4"
    ],
    "exclude_paths": [
      "/vol1/cold-files/",
      "/vol1/cifs/names"
    ],
    "include_extensions": [
      "vmdk",
      "mp*"
    ],
    "max_file_size": 10737418240
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

schedule

Schedule of the task.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the Vscan On-Demand policy configuration for an SVM

PATCH `/protocols/vscan/{svm.uuid}/on-demand-policies/{name}`

Introduced In: 9.6

Updates the Vscan On-Demand policy configuration of an SVM. Use schedule name or schedule UUID to schedule an On-Demand scan.

Related ONTAP commands

- `vserver vscan on-demand-task modify`
- `vserver vscan on-demand-task schedule`
- `vserver vscan on-demand-task unschedule`

Learn more

- DOC /protocols/vscan/{svm.uuid}/on-demand-policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "log_path": "/vol0/report_dir",
  "scan_paths": [
    "/vol1/",
    "/vol2/cifs/"
  ],
  "schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": {
    "exclude_extensions": [
      "mp3",
      "mp4"
    ],
    "exclude_paths": [
      "/vol1/cold-files/",
      "/vol1/cifs/names"
    ],
    "include_extensions": [
      "vmdk",
      "mp*"
    ],
    "max_file_size": 10737418240
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027101	The file size must be in the range 1KB to 1TB
10027107	The include extensions list cannot be empty. Specify at least one extension for inclusion.
10027164	An On-Demand policy cannot be scheduled, as the Vscan is disabled. Enable the Vscan and retry the operation.
10027167	The specified schedule does not exist. Create the schedule or create a policy without specifying the schedule.
10027168	The specified scan path does not exist. The scan path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use “/” not “\”)
10027169	The specified scan path is not supported for scanning.
10027174	The specified exclude path is invalid. The path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use "/" not "\")
10027175	An On-Demand policy cannot be scheduled as the SVM is not in an operational state.
10027176	The log-path specified does not exist. The log path must be specified from the root of the SVM, and must begin with UNIX path delimiters (use “/” not “\”)
10027177	The log path specified is not supported.
10027253	The number of paths specified exceeds the configured maximum number of paths. You cannot specify more than the maximum number of configured paths.
10027254	The number of extensions specified exceeds the configured maximum number of extensions. You cannot specify more than the maximum number of configured extensions.
10027255	Another policy is already scheduled. Only one policy per SVM is allowed to be scheduled at any one time. Update a policy without specifying a schedule.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Schedule of the task.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

scope

Name	Type	Description
exclude_extensions	array[string]	List of file extensions for which scanning is not performed.
exclude_paths	array[string]	List of file paths for which scanning must not be performed.
include_extensions	array[string]	List of file extensions to be scanned.
max_file_size	integer	Maximum file size, in bytes, allowed for scanning.
scan_without_extension	boolean	Specifies whether or not files without any extension can be scanned.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_on_demand

Use On-Demand scanning to check files for viruses on a schedule. An On-Demand policy defines the scope of an On-Demand scan.

Name	Type	Description
log_path	string	The path from the Vserver root where the task report is created.
scan_paths	array[string]	List of paths that need to be scanned.
schedule	schedule	Schedule of the task.
scope	scope	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Vscan scanner-pool configuration

Protocols Vscan svm.uuid scanner-pools endpoint overview

Overview

A scanner-pool defines the Vscan servers and privileged users that can connect to SVMs and a scanner policy or role determines whether a scanner-pool is active. You can configure a scanner-pool to be used on the local cluster or any other cluster in an MCC/DR setup.

Examples

Retrieving all fields for all scanner-pools of an SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/<svm-uuid>/scanner-
pools?fields=*&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "1ccbefd6-6132-11ef-92d9-005056bbd354",
      "name": "vs1"
    },
    "name": "scanner-1",
    "servers": [
      "1.1.1.1",
      "10.72.204.27"
    ],
    "privileged_users": [
      "cifs\\u1",
      "cifs\\u2"
    ],
    "role": "primary",
    "cluster": {
      "uuid": "3af387d8-6131-11ef-92d9-005056bbd354",
      "name": "clus1"
    }
  },
  {
    "svm": {
      "uuid": "1ccbefd6-6132-11ef-92d9-005056bbd354",
```

```
      "name": "vs1"
    },
    "name": "scanner-2",
    "servers": [
      "1.1.1.1",
      "10.72.204.27"
    ],
    "privileged_users": [
      "cifs\\u1",
      "cifs\\u2"
    ],
    "role": "secondary",
    "cluster": {
      "uuid": "3af387d8-6131-11ef-92d9-005056bbd354",
      "name": "clus1"
    }
  }
],
"num_records": 2
}
```


Retrieving all scanner-pools with *role* set as *secondary*

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/<svm-uuid>/scanner-
pools?role=secondary&fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "0e2f7c91-f227-11e8-9601-0050568ecc06",
      "name": "vs1"
    },
    "name": "scanner-2",
    "servers": [
      "1.1.1.1",
      "10.72.204.27"
    ],
    "privileged_users": [
      "cifs\\u1",
      "cifs\\u2"
    ],
    "role": "secondary",
    "cluster": {
      "uuid": "0933f9b5-f226-11e8-9601-0050568ecc06",
      "name": "Cluster3"
    }
  }
],
"num_records": 1
}
```

Retrieving the specified scanner-pool associated with an SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/vscan/0e2f7c91-f227-11e8-
9601-0050568ecc06/scanner-pools/scanner-1?fields=*" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "0e2f7c91-f227-11e8-9601-0050568ecc06",
  "name": "vs1"
},
"name": "scanner-1",
"servers": [
  "1.1.1.1",
  "10.72.204.27"
],
"privileged_users": [
  "cifs\\u1",
  "cifs\\u2"
],
"role": "primary",
"cluster": {
  "uuid": "0933f9b5-f226-11e8-9601-0050568ecc06",
  "name": "Cluster3"
}
}
```

Creating a scanner-pool for an SVM with all fields specified

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/b103be27-17b8-11e9-
b451-0050568ecd85/scanner-pools?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"cluster\": {
\"name\": \"Cluster1\", \"uuid\": \"ab746d77-17b7-11e9-b450-0050568ecd85\"
}, \"name\": \"test-scanner\", \"privileged_users\": [ \"cifs\\\\u1\",
\"cifs\\\\u2\" ], \"role\": \"primary\", \"servers\": [ \"1.1.1.1\",
\"10.72.204.27\" ]}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "test-scanner",
    "servers": [
      "1.1.1.1",
      "10.72.204.27"
    ],
    "privileged_users": [
      "cifs\\u1",
      "cifs\\u2"
    ],
    "role": "primary",
    "cluster": {
      "uuid": "ab746d77-17b7-11e9-b450-0050568ecd85",
      "name": "Cluster1"
    }
  }
]
}
```

Creating a scanner-pool for an SVM with an unspecified role and cluster

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/vscan/b103be27-17b8-11e9-
b451-0050568ecd85/scanner-pools" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"name\": \"test-scanner-1\",
\"privileged_users\": [ \"cifs\\\\u1\", \"cifs\\\\u2\" ], \"servers\": [
\"1.1.1.1\", \"10.72.204.27\" ]}"

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "test-scanner-1",
    "servers": [
      "1.1.1.1",
      "10.72.204.27"
    ],
    "privileged_users": [
      "cifs\\u1",
      "cifs\\u2"
    ]
  }
]
}
```

Updating a scanner-pool for an SVM with all of the fields specified

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/0e2f7c91-f227-11e8-
9601-0050568ecc06/scanner-pools/test-scanner-1" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"cluster\": {
\"name\": \"Cluster3\", \"uuid\": \"0933f9b5-f226-11e8-9601-0050568ecc06\"
}, \"privileged_users\": [ \"cifs\\\\u1\", \"cifs\\\\u2\" ], \"role\":
\"secondary\", \"servers\": [ \"1.1.1.1\", \"10.72.204.27\" ]}"
```

Updating the "role" of a scanner-pool for an SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/vscan/0e2f7c91-f227-11e8-
9601-0050568ecc06/scanner-pools/test-scanner-1" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"cluster\": {
\"name\": \"Cluster3\", \"uuid\": \"0933f9b5-f226-11e8-9601-0050568ecc06\"
}, \"role\": \"primary\"}"
```

Deleting a scanner-pool for a specified SVM

```
# The API:
/api/protocols/vscan/{svm.uuid}/scanner-pools/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/vscan/0e2f7c91-f227-11e8-
9601-0050568ecc06/scanner-pools/test-scanner-1" -H "accept:
application/json"
```

Retrieve the Vscan scanner-pool configuration for an SVM

GET `/protocols/vscan/{svm.uuid}/scanner-pools`

Introduced In: 9.6

Retrieves the Vscan scanner-pool configuration of an SVM.

Related ONTAP commands

- `vserver vscan scanner-pool show`
- `vserver vscan scanner-pool privileged-users show`
- `vserver vscan scanner-pool servers show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name • maxLength: 256 • minLength: 1

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.10
cluster.name	string	query	False	Filter by cluster.name
cluster.uuid	string	query	False	Filter by cluster.uuid
role	string	query	False	Filter by role
servers	string	query	False	Filter by servers
privileged_users	string	query	False	Filter by privileged_users
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[vscan_scanner_pool]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "scanner-1",
      "privileged_users": [
        "cifs\\u1",
        "cifs\\u2"
      ],
      "role": "string",
      "servers": [
        "1.1.1.1",
        "10.72.204.27",
        "vmwin204-27.fsct.nb"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the Vscan scanner-pool configuration for an SVM

POST `/protocols/vscan/{svm.uuid}/scanner-pools`

Introduced In: 9.6

Creates a Vscan scanner-pool configuration for a specified SVM. You can create a scanner-pool with all fields specified or only mandatory fields specified.

Important notes:

- A scanner-pool must have servers and privileged users specified.
- If the role or cluster is not specified, the scanner-pool is created on the local cluster with the role set as primary.
  *`Only one of the fields cluster-uuid or cluster-name is required.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the Vscan configuration.
- `name` - Scanner-pool name.
- `privileged_users` - List of privileged users.

- `servers` - List of server IP addresses or FQDNs.

Recommended optional properties

- `role` - Setting a role for a scanner-pool is recommended.
- `cluster` - Passing the cluster name or UUID (or both) in a multi-cluster environment is recommended.

Default property values

If not specified in POST, the following default property values are assigned:

- `role` - *primary*
- `cluster.name` - Local cluster name.
- `cluster.uuid` - Local cluster UUID.

Related ONTAP commands

- `vserver vscan scanner-pool create`
- `vserver vscan scanner-pool apply-policy`
- `vserver vscan scanner-pool privileged-users add`
- `vserver vscan scanner-pool servers add`

Learn more

- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
cluster	cluster_reference	

Name	Type	Description
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "scanner-1",
  "privileged_users": [
    "cifs\\u1",
    "cifs\\u2"
  ],
  "role": "string",
  "servers": [
    "1.1.1.1",
    "10.72.204.27",
    "vmwin204-27.fsct.nb"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[vscan_scanner_pool]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "cluster": {
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "scanner-1",
      "privileged_users": [
        "cifs\\u1",
        "cifs\\u2"
      ],
      "role": "string",
      "servers": [
        "1.1.1.1",
        "10.72.204.27",
        "vmwin204-27.fsct.nb"
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027076 +	The new scanner-pool cannot be created because the SVM has reached the maximum limit of 20 scanner-pools. Delete an existing scanner-pool in order to create a new scanner-pool
10027086 +	The specified list of servers contains one or more entries that cannot be resolved
10027258 +	The specified cluster_name does not exist
10027256 +	The specified cluster_uuid does not exist
10027257 +	The specified cluster_name and cluster_uuid are valid but belong to different clusters
10027248 +	Scanner-pool created successfully but failed to activate
10027107 +	The list of privileged users or list of servers specified is empty
10027108 +	The list of privileged users specified contains an invalid entry
10027063 +	Attempting to modify a scanner-pool on an SVM owned by the cluster with a data SVM
10027086 +	DNS resolution failed for one or more hostnames
10027119 +	The privileged user contains characters that are not allowed
10027261 +	One of the specified IPv4 addresses in the "-hostnames" is either a multicast, loopback, broadcast, or '0.0.0.0' address.
10027262 +	One of the specified IPv6 addresses in the "-hostnames" is either a link-local, multicast, v4-compatible, v4-mapped, loopback or '::/0' address.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_reference

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".

Name	Type	Description
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the Vscan scanner-pool configuration

DELETE `/protocols/vscan/{svm.uuid}/scanner-pools/{name}`

Introduced In: 9.6

Deletes a Vscan scanner-pool configuration.

Important notes:

- The Vscan scanner-pool DELETE endpoint deletes all of the Vscan scanner-pools for a specified SVM.
- If a Vscan is enabled, it requires at least one scanner-pool to be in the active state. Therefore, disable Vscan on the specified SVM so all the scanner-pools configured on that SVM can be deleted.

Related ONTAP commands

- `vserver vscan scanner-pool delete`

Learn more

- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027070 +	Attempting to delete a scanner-pool but it is the only active scanner-pool for a Vscan enabled on the SVM
10027064 +	Attempting to delete a scanner-pool with a data SVM which was created by the SVM owned by the cluster

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the Vscan scanner-pool configuration for an SVM

GET `/protocols/vscan/{svm.uuid}/scanner-pools/{name}`

Introduced In: 9.6

Retrieves the configuration of a specified scanner-pool of an SVM.

Related ONTAP commands

- `vserver vscan scanner-pool show`
- `vserver vscan scanner-pool privileged-users show`
- `vserver vscan scanner-pool servers show`

Learn more

- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
name	string	path	True	

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
cluster	cluster_reference	
name	string	Specifies the name of the scanner pool. Scanner pool name can be up to 256 characters long and is a string that can only contain any combination of ASCII-range alphanumeric characters a-z, A-Z, 0-9), "_", "-" and ".".
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6

Name	Type	Description
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "scanner-1",
  "privileged_users": [
    "cifs\\u1",
    "cifs\\u2"
  ],
  "role": "string",
  "servers": [
    "1.1.1.1",
    "10.72.204.27",
    "vmwin204-27.fsct.nb"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the Vscan scanner-pool configuration for an SVM

PATCH `/protocols/vscan/{svm.uuid}/scanner-pools/{name}`

Introduced In: 9.6

Updates the Vscan scanner-pool configuration of an SVM.

Important notes:

- Along with servers and privileged-users, the role of a scanner-pool can also be updated with the cluster on which a scanner-pool is allowed.
- If role is specified and cluster isn't, then role is applied to the local cluster.

Related ONTAP commands

- `vserver vscan scanner-pool modify`
- `vserver vscan scanner-pool apply-policy`
- `vserver vscan scanner-pool privileged-users add`
- `vserver vscan scanner-pool privileged-users remove`
- `vserver vscan scanner-pool servers remove`
- `vserver vscan scanner-pool servers add`

Learn more

- DOC /protocols/vscan/{svm.uuid}/scanner-pools

Parameters

Name	Type	In	Required	Description
name	string	path	True	
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
cluster	cluster_reference	
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "privileged_users": [
    "cifs\\u1",
    "cifs\\u2"
  ],
  "role": "string",
  "servers": [
    "1.1.1.1",
    "10.72.204.27",
    "vmwin204-27.fsct.nb"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10027258 +	The specified cluster_name does not exist
10027256 +	The specified cluster_uuid does not exist
10027257 +	The specified cluster_name and cluster_uuid are valid but belong to different clusters
10027248 +	Scanner-pool updated successfully but failed to apply the specified role

Error Code	Description
10027107 +	The list of privileged users or list of servers specified is empty
10027108 +	The list of privileged users specified contains an invalid entry
10027063 +	Attempting to modify a scanner-pool on an SVM owned by the cluster with a data SVM
10027119 +	The privileged user contains characters that are not allowed
10027261 +	One of the specified IPv4 addresses in the "-hostnames" is either a multicast, loopback, broadcast, or '0.0.0.0' address.
10027262 +	One of the specified IPv6 addresses in the "-hostnames" is either a link-local, multicast, v4-compatible, v4-mapped, loopback or '::/0' address.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_reference

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vscan_scanner_pool

Scanner pool is a set of attributes which are used to validate and manage connections between clustered ONTAP and external virus-scanning server, or "Vscan server".

Name	Type	Description
cluster	cluster_reference	

Name	Type	Description
privileged_users	array[string]	Specifies a list of privileged users. A valid form of privileged user-name is "domain-name\user-name". Privileged user-names are stored and treated as case-insensitive strings. Virus scanners must use one of the registered privileged users for connecting to clustered Data ONTAP for exchanging virus-scanning protocol messages and to access file for scanning, remedying and quarantining operations. • example: ["cifs\u1", "cifs\u2"] • Introduced in: 9.6
role	string	Specifies the role of the scanner pool. The possible values are: • primary - Always active. • secondary - Active only when none of the primary external virus-scanning servers are connected. • idle - Always inactive.
servers	array[string]	Specifies a list of IP addresses or FQDN for each Vscan server host names which are allowed to connect to clustered ONTAP. • example: ["1.1.1.1", "10.72.204.27", "vmwin204-27.fsct.nb"] • Introduced in: 9.6
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

NDMP

NDMP overview

NDMP (Network Data Management Protocol) provides an open standard for network-based backup of network-attached storage (NAS). NDMP minimizes the coding required for different applications by providing standard commands for backing up and restoring file servers. NDMP increases the speed and efficiency of NAS data protection, as data can bypass backup servers and be written directly to tape storage. Starting from ONTAP 8.2, the software supports SVM aware NDMP backups. This helps in optimizing NDMP backup performance by choosing efficient data transfer paths and is fully compatible with integrated non-disruptive operations and volume mobility capabilities of ONTAP software. In order to support this feature, a CAB extension must be implemented by backup vendors.
These APIs allow you to manage the following endpoints:

- ndmp
- ndmp nodes
- ndmp svms
- ndmp sessions

APIs

NDMP

These APIs are used to manage NDMP mode, SVM-scope or node-scope.

NDMP nodes

These APIs are used to manage node configurations.

NDMP SVMs

These APIs are used to manage NDMP configurations of SVMs.

NDMP sessions

These APIs are used to manage diagnostic information on NDMP sessions belonging to a specific SVM in the case of SVM-scope or to a specific node in the case of node-scope.

Manage NDMP mode

Protocols NDMP endpoint overview

You can use this API to manage NDMP mode: SVM-scope or node-scope.

Examples

Updates NDMP mode to SVM:

```
PATCH "/api/protocols/ndmp" '{"mode":"svm"}'
```

Updates NDMP mode to node:

```
PATCH "/api/protocols/ndmp" '{"mode":"node"}'
```

Retrieve the current NDMP mode

GET `/protocols/ndmp`

Introduced In: 9.7

Retrieves the current NDMP mode.

Related ONTAP commands

- `system services ndmp node-scope-mode status`

Learn more

- DOC /protocols/ndmp

Parameters

Name	Type	In	Required	Description
mode	string	query	False	Filter by mode
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
mode	string	Indicates whether NDMP is in node-scoped or SVM-scoped mode.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "mode": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the NDMP mode

PATCH `/protocols/ndmp`

Introduced In: 9.7

Updates the NDMP mode.

Related ONTAP commands

- `system services ndmp node-scope-mode`

Learn more

- DOC /protocols/ndmp

Request Body

Name	Type	Description
mode	string	Indicates whether NDMP is in node-scoped or SVM-scoped mode.

Example request

```
{
  "mode": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
mode	string	Indicates whether NDMP is in node-scoped or SVM-scoped mode.

Example response

```
{
  "mode": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
65601575	NDMP node-scope mode is not supported in FSx for ONTAP.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_ndmp_properties

Name	Type	Description
mode	string	Indicates whether NDMP is in node-scoped or SVM-scoped mode.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NDMP node configurations

Protocols NDMP nodes endpoint overview

You can use this API to manage node configurations. The authentication types "plaintext" and "plaintext_sso" are used to show that the password uses clear text. Also, they contain no differences for NDMP node scope.

Examples

Updates "enabled" and "authentication_types" fields:

```
 PATCH "/api/protocols/ndmp/nodes/13bb2092-458b-11e9-9c06-0050568ea64e"
'{"enabled":"false","authentication_types":["plaintext"]}'
```

Updates the "user" field:

```
 PATCH "/api/protocols/ndmp/nodes/13bb2092-458b-11e9-9c06-0050568ea64e"
'{"user":"user22"}'
```

Retrieve the NDMP node configurations for all nodes

GET `/protocols/ndmp/nodes`

Introduced In: 9.7

Retrieves NDMP node configurations for all of the nodes.

Related ONTAP commands

- `system services ndmp show`

Learn more

- DOC /protocols/ndmp/nodes

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
authentication_types	string	query	False	Filter by authentication_types
user	string	query	False	Filter by user
node.uuid	string	query	False	Filter by node.uuid

Name	Type	In	Required	Description
node.name	string	query	False	Filter by node.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of Records
records	array[ndmp_node]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_types": [
        "plaintext",
        "challenge"
      ],
      "enabled": 1,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "user": "ndmp_user"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812801	Node-scoped operations are not allowed in an SVM-scope.
68812804	Failed to get the node name from the specified node UUID.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Storage system node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ndmp_node

Name	Type	Description
_links	_links	
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled?
node	node	Storage system node
user	string	NDMP user ID

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the NDMP node configuration for a node

GET `/protocols/ndmp/nodes/{node.uuid}`

Introduced In: 9.7

Retrieves an NDMP node configuration for a specific node.

Related ONTAP commands

- `system services ndmp show`

Learn more

- DOC /protocols/ndmp/nodes

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled?
node	node	Storage system node
user	string	NDMP user ID

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "user": "ndmp_user"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812801	Node-scoped operations are not allowed in an SVM-scope.
68812802	The UUID is not valid.
68812804	Failed to get the node name from the specified node UUID.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Storage system node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the NDMP node configuration for a node

PATCH `/protocols/ndmp/nodes/{node.uuid}`

Introduced In: 9.7

Updates the NDMP node configuration for a specific node.

Related ONTAP commands

- `system services ndmp modify`

Learn more

- DOC /protocols/ndmp/nodes

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID

Request Body

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled?
node	node	Storage system node
password	string	NDMP password. This can only be set and cannot be read back.
user	string	NDMP user ID

Example request

```
{
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "password": "string",
  "user": "ndmp_user"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled?
node	node	Storage system node
password	string	NDMP password. This can only be set and cannot be read back.
user	string	NDMP user ID

Example response

```
{
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "password": "string",
  "user": "ndmp_user"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812800	The user is required to enable NDMP on a node.
68812801	Node-scoped operations are not allowed in an SVM-scope.
68812802	The UUID is not valid.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Storage system node

Name	Type	Description
name	string	
uuid	string	

ndmp_node

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled?
node	node	Storage system node
password	string	NDMP password. This can only be set and cannot be read back.
user	string	NDMP user ID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage NDMP session configurations

Protocols NDMP sessions endpoint overview

You can use this API to manage diagnostic information on NDMP sessions belonging to a specific SVM in the case of SVM-scope or to a specific node in the case of node-scope.

Examples

Retrieves NDMP session details under node-scope:

```
GET "/api/protocols/ndmp/sessions/9b372ce7-3a4b-11e9-a7f8-
0050568e3d73/2000"
```

Retrieves NDMP session details under SVM-scope:

```
GET "/api/protocols/ndmp/sessions/13bb2092-458b-11e9-9c06-
0050568ea604/2000:4000"
```

Deletes NDMP session details under node-scope:

```
DELETE "/api/protocols/ndmp/sessions/9b372ce7-3a4b-11e9-a7f8-
0050568e3d73/2000"
```

Deletes NDMP session details under SVM-scope:

```
DELETE "/api/protocols/ndmp/sessions/13bb2092-458b-11e9-9c06-
0050568ea604/2000:4000"
```

Retrieve NDMP sessions

GET `/protocols/ndmp/sessions`

Introduced In: 9.7

Retrieves a collection of NDMP sessions. In the case of SVM-scope, if this API is executed on a data IP, it displays the list of NDMP sessions under the specified SVM; otherwise it displays the list of NDMP sessions for

all the SVMs under the cluster. In the case of node-scope, it displays the list of NDMP sessions for all nodes.

Related ONTAP commands

- `vserver services ndmp probe`
- `system services ndmp probe`

Learn more

- DOC /protocols/ndmp/sessions

Parameters

Name	Type	In	Required	Description
mover.mode	string	query	False	Filter by mover.mode
mover.reason	string	query	False	Filter by mover.reason
mover.connection.port	integer	query	False	Filter by mover.connection.port
mover.connection.type	string	query	False	Filter by mover.connection.type
mover.connection.address	string	query	False	Filter by mover.connection.address
mover.state	string	query	False	Filter by mover.state
mover.bytes_moved	integer	query	False	Filter by mover.bytes_moved
data_path	string	query	False	Filter by data_path
backup_engine	string	query	False	Filter by backup_engine
tape_device	string	query	False	Filter by tape_device
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name

Name	Type	In	Required	Description
id	string	query	False	Filter by id
client_address	string	query	False	Filter by client_address
scsi.lun_id	integer	query	False	Filter by scsi.lun_id
scsi.host_adapter	integer	query	False	Filter by scsi.host_adapter
scsi.target_id	integer	query	False	Filter by scsi.target_id
scsi.device_id	string	query	False	Filter by scsi.device_id
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
source_address	string	query	False	Filter by source_address
client_port	integer	query	False	Filter by client_port
uuid	string	query	False	Filter by uuid • Introduced in: 9.9
tape_mode	string	query	False	Filter by tape_mode
data.connection.port	integer	query	False	Filter by data.connection.port
data.connection.type	string	query	False	Filter by data.connection.type
data.connection.address	string	query	False	Filter by data.connection.address
data.reason	string	query	False	Filter by data.reason

Name	Type	In	Required	Description
data.operation	string	query	False	Filter by data.operation
data.bytes_processed	integer	query	False	Filter by data.bytes_processed
data.state	string	query	False	Filter by data.state
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records.
records	array[ndmp_session]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "backup_engine": "string",
      "client_address": "string",
      "data": {
        "bytes_processed": 5000,
        "connection": {
          "address": "string",
          "port": 18600,
          "type": "local"
        },
        "operation": "backup",
        "reason": "aborted",
        "state": "halted"
      },
      "data_path": "/vserver1/vol1",
      "id": "string",
      "mover": {
        "bytes_moved": 645120,
        "connection": {
          "address": "string",
          "port": 18600,
          "type": "local"
        },
        "mode": "read",
        "reason": "end_of_media",
        "state": "connected"
      },
      "node": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scsi": {
        "device_id": "string"
      },
      "source_address": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tape_device": "nrst0a",
      "tape_mode": "write",
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812805	Failed to obtain the NDMP mode of the operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ndmp_connect

Indicates the NDMP connection attributes.

Name	Type	Description
address	string	Indicates the NDMP data connection address.
port	integer	Indicates the NDMP data connection port.
type	string	The different NDMP connection types.

ndmp_data

Information about the NDMP data server.

Name	Type	Description
bytes_processed	integer	Indicates the NDMP data bytes processed.
connection	ndmp_connect	Indicates the NDMP connection attributes.
operation	string	Indicates the NDMP data server operation.

Name	Type	Description
reason	string	If the NDMP mover or data server is in the paused or halted state, then this property provides additional information for the state.
state	string	The various states of the NDMP state machine during a backup or restore workflow.

ndmp_mover

Information about the NDMP mover.

Name	Type	Description
bytes_moved	integer	Indicates the NDMP mover bytes moved.
connection	ndmp_connect	Indicates the NDMP connection attributes.
mode	string	The modes of a NDMP mover instance.
reason	string	If the NDMP mover or data server is in the paused or halted state, then this property provides additional information for the state.
state	string	The various states of the NDMP state machine during a backup or restore workflow.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ndmp_scsi

Information about the NDMP SCSI server.

Name	Type	Description
device_id	string	Indicates the NDMP SCSI device ID.
host_adapter	integer	Indicates the NDMP SCSI host adapter.
lun_id	integer	Indicates the NDMP SCSI LUN ID.
target_id	integer	Indicates the NDMP SCSI target ID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ndmp_session

Name	Type	Description
_links	_links	
backup_engine	string	Indicates the NDMP backup engine.
client_address	string	Indicates the NDMP client address.
client_port	integer	Indicates the NDMP client port.
data	ndmp_data	Information about the NDMP data server.
data_path	string	Indicates the NDMP backup or restore path.

Name	Type	Description
id	string	NDMP session identifier.
mover	ndmp_mover	Information about the NDMP mover.
node	node	
scsi	ndmp_scsi	Information about the NDMP SCSI server.
source_address	string	Indicates the NDMP local address on which connection was established.
svm	svm	SVM, applies only to SVM-scoped objects.
tape_device	string	Indicates the NDMP tape device.
tape_mode	string	The modes of a NDMP mover instance.
uuid	string	The NDMP node or SVM UUID based on whether NDMP is operating in node-scope or SVM-scope mode.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete an NDMP session

DELETE `/protocols/ndmp/sessions/{owner.uuid}/{session.id}`

Introduced In: 9.7

Deletes a specific NDMP session.

Related ONTAP commands

- `vserver services ndmp kill`
- `system services ndmp kill`

Learn more

- DOC /protocols/ndmp/sessions

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	NDMP node UUID
session.id	string	path	True	Session identifier

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812802	The UUID is not valid.
68812803	Failed to get the SVM name from the specified SVM UUID.

Error code	Description
68812804	Failed to get the node name from the specified node UUID.
68812805	Failed to obtain the NDMP mode of operation.
68812806	UUID and Session ID are required.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve NDMP session details

GET `/protocols/ndmp/sessions/{owner.uuid}/{session.id}`

Introduced In: 9.7

Retrieves the details of a specific NDMP session.

Related ONTAP commands

- `vserver services ndmp probe`
- `system services ndmp probe`

Learn more

- DOC /protocols/ndmp/sessions

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	The NDMP node or SVM UUID based on whether NDMP is operating in node-scope or SVM-scope mode.
session.id	string	path	True	NDMP session identifier
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
backup_engine	string	Indicates the NDMP backup engine.
client_address	string	Indicates the NDMP client address.
client_port	integer	Indicates the NDMP client port.
data	ndmp_data	Information about the NDMP data server.
data_path	string	Indicates the NDMP backup or restore path.
id	string	NDMP session identifier.
mover	ndmp_mover	Information about the NDMP mover.
node	node	
scsi	ndmp_scsi	Information about the NDMP SCSI server.

Name	Type	Description
source_address	string	Indicates the NDMP local address on which connection was established.
svm	svm	SVM, applies only to SVM-scoped objects.
tape_device	string	Indicates the NDMP tape device.
tape_mode	string	The modes of a NDMP mover instance.
uuid	string	The NDMP node or SVM UUID based on whether NDMP is operating in node-scope or SVM-scope mode.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "backup_engine": "string",
  "client_address": "string",
  "data": {
    "bytes_processed": 5000,
    "connection": {
      "address": "string",
      "port": 18600,
      "type": "local"
    },
    "operation": "backup",
    "reason": "aborted",
    "state": "halted"
  },
  "data_path": "/vserver1/vol1",
  "id": "string",
  "mover": {
    "bytes_moved": 645120,
    "connection": {
      "address": "string",
      "port": 18600,
      "type": "local"
    },
    "mode": "read",
    "reason": "end_of_media",
    "state": "connected"
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scsi": {
    "device_id": "string"
  },
```

```
  "source_address": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tape_device": "nrst0a",
  "tape_mode": "write",
  "uuid": "string"
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
68812802	The UUID is not valid.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ndmp_connect

Indicates the NDMP connection attributes.

Name	Type	Description
address	string	Indicates the NDMP data connection address.
port	integer	Indicates the NDMP data connection port.
type	string	The different NDMP connection types.

ndmp_data

Information about the NDMP data server.

Name	Type	Description
bytes_processed	integer	Indicates the NDMP data bytes processed.
connection	ndmp_connect	Indicates the NDMP connection attributes.
operation	string	Indicates the NDMP data server operation.
reason	string	If the NDMP mover or data server is in the paused or halted state, then this property provides additional information for the state.

Name	Type	Description
state	string	The various states of the NDMP state machine during a backup or restore workflow.

ndmp_mover

Information about the NDMP mover.

Name	Type	Description
bytes_moved	integer	Indicates the NDMP mover bytes moved.
connection	ndmp_connect	Indicates the NDMP connection attributes.
mode	string	The modes of a NDMP mover instance.
reason	string	If the NDMP mover or data server is in the paused or halted state, then this property provides additional information for the state.
state	string	The various states of the NDMP state machine during a backup or restore workflow.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ndmp_scsi

Information about the NDMP SCSI server.

Name	Type	Description
device_id	string	Indicates the NDMP SCSI device ID.

Name	Type	Description
host_adapter	integer	Indicates the NDMP SCSI host adapter.
lun_id	integer	Indicates the NDMP SCSI LUN ID.
target_id	integer	Indicates the NDMP SCSI target ID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NDMP configuration of SVM

Protocols NDMP svms endpoint overview

You can use this API to manage NDMP configurations of SVMs.

Examples

Updates the "enabled" field:

```
 PATCH "/api/protocols/ndmp/svms/9b372ce7-3a4b-11e9-a7f8-0050568e3d73"
'{"enabled":"false"}'
```

Updates the "authentication_types" field:

```
 PATCH "/api/protocols/ndmp/svms/9b372ce7-3a4b-11e9-a7f8-0050568e3d73"
'{"authentication_types":["challenge"]}'
```

Retrieve NDMP configurations for all SVMs

GET `/protocols/ndmp/svms`

Introduced In: 9.7

Retrieves NDMP configurations for all SVMs.

Related ONTAP commands

- `vserver services ndmp show`

Learn more

- DOC /protocols/ndmp/svms

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
authentication_types	string	query	False	Filter by authentication_types

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records
records	array[ndmp_svm]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_types": [
        "plaintext",
        "challenge"
      ],
      "enabled": 1,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
2	The UUID provided is an invalid value for field "svm.uuid".
262197	The value provided is invalid for field "fields".
65601536	The operation is not supported because NDMP SVM-aware mode is disabled.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ndmp_svm

Name	Type	Description
_links	_links	
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled on the SVM?
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve NDMP configuration for an SVM

GET `/protocols/ndmp/svms/{svm.uuid}`

Introduced In: 9.7

Retrieves an NDMP configuration for a specific SVM.

Related ONTAP commands

- `vserver services ndmp show`

Learn more

- DOC /protocols/ndmp/svms

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled on the SVM?
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
2	The UUID provided is an invalid value for field "svm.uuid".
262197	The value provided is invalid for field "fields".
65601536	The operation is not supported because NDMP SVM-aware mode is disabled.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update NDMP configuration for an SVM

PATCH `/protocols/ndmp/svms/{svm.uuid}`

Introduced In: 9.7

Updates the NDMP configuration for a specific SVM.

Related ONTAP commands

- `vserver services ndmp modify`

Learn more

- DOC /protocols/ndmp/svms

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Request Body

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled on the SVM?
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled on the SVM?
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "authentication_types": [
    "plaintext",
    "challenge"
  ],
  "enabled": 1,
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
65601536	The operation is not supported because NDMP SVM-aware mode is disabled.
65601551	Authentication type "plaintext_sso" cannot be combined with other authentication types.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ndmp_svm

Name	Type	Description
authentication_types	array[string]	NDMP authentication types.
enabled	boolean	Is the NDMP service enabled on the SVM?
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Generate the NDMP user password

Protocols NDMP svms svm.uuid passwords user endpoint overview

Generates and retrieves the password for a given NDMP user in the SVM context.

Examples

```
GET "/api/protocols/ndmp/svms/ca8e29e0-e116-11ea-876c-
0050568ea754/passwords/ndmpuser"
```

Generate and retrieve the password for an NDMP user

GET `/protocols/ndmp/svms/{svm.uuid}/passwords/{user}`

Introduced In: 9.9

Generates and retrieves the password for the specified NDMP user.

Related ONTAP commands

- `vserver services ndmp generate-password`

Learn more

- DOC /protocols/ndmp/svms/{svm.uuid}/passwords/{user}

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
user	string	path	True	User name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
password	string	NDMP Password
svm	svm	SVM, applies only to SVM-scoped objects.
user	string	NDMP user

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "password": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "user": "string"
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
65601536	The operation is not supported because NDMP SVM-aware mode is disabled.
65601560	An NDMP-specific password is not supported for authentication type "plaintext_sso".
65601587	The NDMP protocol is not supported on this platform.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

NVMe

NVMe overview

Overview

The Non-Volatile Memory Express (NVMe) API endpoints and objects provide for configuration, provisioning and management of the NVMe-related objects.
NVMe over Fabrics (NVMe-oF) refers to the extensions and changes to the base NVMe command set to support NVMe commands over a fabric interconnect and from multiple hosts simultaneously. ONTAP implements elements of both NVMe and NVMe-oF. Throughout this documentation, NVMe is generally used to refer to both NVMe and NVMe-oF.

Fibre Channel Logins

Fibre Channel logins represent connections, formed by Fibre Channel initiators, that have successfully logged in to ONTAP. This represents the Fibre Channel login on which higher-level protocols such as Fibre Channel Protocol (FCP) and Non-Volatile Memory Express over Fibre Channel (NVMe over FC) rely.

The Fibre Channel logins REST API provides information about active Fibre Channel logins.

NVMe Interfaces

NVMe interfaces are network interfaces configured to support an NVMe over Fabrics protocol. The NVMe interfaces are Fibre Channel interfaces supporting an NVMe-oF data protocol. Regardless of the underlying physical and data protocol, NVMe interfaces are treated equally for the host-side application configuration. This endpoint provides a consolidated view of all NVMe interfaces for the purpose of configuring host-side applications.

The NVMe interfaces REST API provides NVMe-specific information about network interfaces configured to support an NVMe-oF protocol.

Learn More

- *Fibre Channel Interfaces* found in the *networking* section. Fibre Channel interfaces are the logical endpoints for Fibre Channel network connections to an SVM.

NVMe Services

A Non-Volatile Memory Express (NVMe) service defines the properties of the NVMe controller target for an SVM. There can be at most one NVMe service for a given SVM. An SVM's NVMe service must be created before NVMe host initiators can connect to the SVM.

The Non-Volatile Memory Express (NVMe) service REST API allows you to create, update, delete, and discover NVMe services for SVMs.

NVMe Subsystem Controllers

Non-Volatile Memory Express (NVMe) subsystem controllers represent dynamic connections between hosts and a storage solution.

The NVMe subsystem controllers REST API provides information about connected hosts.

NVMe Subsystem Maps

An NVMe subsystem map is an association of an NVMe namespace with an NVMe subsystem. When an NVMe namespace is mapped to an NVMe subsystem, the NVMe subsystem's hosts are granted access to the NVMe namespace. The relationship between an NVMe subsystem and an NVMe namespace is one subsystem to many namespaces.

The NVMe subsystem map REST API allows you to create, delete, and discover NVMe subsystem maps.

NVMe Subsystems

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

The NVMe subsystem REST API allows you to create, update, delete, and discover NVMe subsystems. It also allows you to add and remove NVMe hosts that can access the subsystem and associated namespaces.

NVMe Namespaces

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

The NVMe namespace REST API allows you to create, update, delete, and discover NVMe namespaces.

View NVMe interfaces

Protocols NVMe interfaces endpoint overview

Overview

NVMe interfaces are network interfaces configured to support an NVMe over Fabrics (NVMe-oF) protocol. The NVMe interfaces are Fibre Channel (FC) interfaces supporting an NVMe-oF data protocol. Regardless of the underlying physical and data protocol, NVMe interfaces are treated equally for host-side application configuration. This endpoint provides a consolidated view of all NVMe interfaces for the purpose of configuring host-side applications.

The NVMe interfaces REST API provides NVMe-specific information about network interfaces configured to support an NVMe-oF protocol.

NVMe interfaces must be created using the protocol-specific endpoints for FC interfaces. See POST /network/fc/interfaces . After creation, the interfaces are available via this interface.

Examples

Retrieving summary information for all NVMe interfaces

```
# The API:
GET /api/protocols/nvme/interfaces

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/interfaces' -H 'Accept:
application/hal+json'
```

```
# The response:
{
"records": [
  {
    "svm": {
      "uuid": "013e2c44-0d30-11e9-a684-005056bbdb14",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/013e2c44-0d30-11e9-a684-005056bbdb14"
        }
      }
    },
    "uuid": "74d69872-0d30-11e9-a684-005056bbdb14",
    "name": "nvme1",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/interfaces/74d69872-0d30-11e9-a684-
005056bbdb14"
      }
    }
  },
  {
    "svm": {
      "uuid": "013e2c44-0d30-11e9-a684-005056bbdb14",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/013e2c44-0d30-11e9-a684-005056bbdb14"
        }
      }
    },
    "uuid": "77ded991-0d30-11e9-a684-005056bbdb14",
    "name": "nvme2",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/interfaces/77ded991-0d30-11e9-a684-
005056bbdb14"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/interfaces"
```

```
  }
}
}
```

Retrieving detailed information for a specific NVMe interface

```
# The API:
GET /api/protocols/nvme/interfaces/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/interfaces/77ded991-
0d30-11e9-a684-005056bbdb14' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "013e2c44-0d30-11e9-a684-005056bbdb14",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/013e2c44-0d30-11e9-a684-005056bbdb14"
    }
  }
},
"uuid": "77ded991-0d30-11e9-a684-005056bbdb14",
"name": "nvme2",
"enabled": true,
"node": {
  "name": "node1",
  "uuid": "cd4d47fd-0d2e-11e9-a684-005056bbdb14",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/cd4d47fd-0d2e-11e9-a684-005056bbdb14"
    }
  }
},
"transport_address": "nn-0x2003005056bbdb14:pn-0x2005005056bbdb14",
"fc_interface": {
  "wwnn": "20:03:00:50:56:bb:db:14",
  "wwpn": "20:05:00:50:56:bb:db:14",
  "port": {
    "name": "1a",
    "uuid": "081ec491-0d2f-11e9-a684-005056bbdb14",
    "node": {
```

```
      "name": "node1"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/081ec491-0d2f-11e9-a684-
005056bbdb14"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/network/fc/interfaces/77ded991-0d30-11e9-a684-
005056bbdb14"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/protocols/nvme/interfaces/77ded991-0d30-11e9-a684-
005056bbdb14"
  }
}
}
```


Retrieve NVMe interfaces

GET `/protocols/nvme/interfaces`

Introduced In: 9.6

Retrieves NVMe interfaces.

Related ONTAP commands

- `vserver nvme show-interface`

Learn more

- DOC /protocols/nvme/interfaces

Parameters

Name	Type	In	Required	Description
transport_address	string	query	False	Filter by transport_address

Name	Type	In	Required	Description
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
transport_protocols	string	query	False	Filter by transport_protocols • Introduced in: 9.10
name	string	query	False	Filter by name
fc_interface.port.uuid	string	query	False	Filter by fc_interface.port.uuid
fc_interface.port.node.name	string	query	False	Filter by fc_interface.port.node.name
fc_interface.port.name	string	query	False	Filter by fc_interface.port.name
fc_interface.wwpn	string	query	False	Filter by fc_interface.wwpn
fc_interface.wwnn	string	query	False	Filter by fc_interface.wwnn
uuid	string	query	False	Filter by uuid
ip_interface.ip.address	string	query	False	Filter by ip_interface.ip.address • Introduced in: 9.10
ip_interface.location.port.name	string	query	False	Filter by ip_interface.location.port.name • Introduced in: 9.10

Name	Type	In	Required	Description
ip_interface.location.port.uuid	string	query	False	Filter by ip_interface.location.port.uuid • Introduced in: 9.10
ip_interface.location.port.node.name	string	query	False	Filter by ip_interface.location.port.node.name • Introduced in: 9.10
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
interface_type	string	query	False	Filter by interface_type • Introduced in: 9.10
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "fc_interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "port": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "0a",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "wwnn": "20:00:00:50:56:b4:13:a9",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "interface_type": "string",
      "ip_interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "location": {
          "port": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "e1b",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      },
      "name": "lif1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "transport_address": "nn-0x200a00a0989062da:pn-
0x200100a0989062da",
      "transport_protocols": [
        "string"
      ],
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
```

```
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

fc_interface

The attributes specific to a Fibre Channel-based NVMe interface.

This is populated when `interface_type` is *fc_interface*.

Name	Type	Description
_links	_links	
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
wwnn	string	The WWNN (world wide node name) of the Fibre Channel NVMe interface.
wwpn	string	The WWPN (world wide port name) of the Fibre Channel NVMe interface.

self_link

Name	Type	Description
self	href	

ip

Name	Type	Description
address	string	IPv4 or IPv6 address

node

Name	Type	Description
name	string	Name of node on which the port is located.

port_reference

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

location

Name	Type	Description
port	port_reference	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

ip_interface

The attributes specific to an IP-based NVMe interface.

This is populated when `interface_type` is *ip_interface*.

Name	Type	Description
_links	self_link	
ip	ip	
location	location	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_interface

NVMe interfaces are network interfaces configured to support an NVMe over Fabrics (NVMe-oF) protocol. The NVMe interfaces are Fibre Channel interfaces supporting an NVMe-oF data protocol. Regardless of the underlying physical and data protocol, NVMe interfaces are treated equally for host-side application configuration. This endpoint provides a consolidated view of all NVMe interfaces for the purpose of configuring host-side applications.

NVMe interfaces must be created using the protocol-specific endpoints for Fibre Channel interfaces. See POST /network/fc/interfaces . After creation, the interfaces are available via this interface.

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the NVMe interface.
fc_interface	fc_interface	The attributes specific to a Fibre Channel-based NVMe interface. This is populated when `interface_type` is *fc_interface*.
interface_type	string	The underlying interface type of the NVMe interface. This property identifies which of *fc_interface* and *ip_interface* will be further populated.
ip_interface	ip_interface	The attributes specific to an IP-based NVMe interface. This is populated when `interface_type` is *ip_interface*.
name	string	The name of the NVMe interface.
node	node	
svm	svm	SVM, applies only to SVM-scoped objects.
transport_address	string	The transport address of the NVMe interface.
transport_protocols	array[string]	The transport protocols supported by the NVMe interface.
uuid	string	The unique identifier of the NVMe interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe interface

GET `/protocols/nvme/interfaces/{uuid}`

Introduced In: 9.6

Retrieves an NVMe interface.

Related ONTAP commands

- `vserver nvme show-interface`

Learn more

- DOC /protocols/nvme/interfaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe interface.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the NVMe interface.
fc_interface	fc_interface	The attributes specific to a Fibre Channel-based NVMe interface. This is populated when `interface_type` is *fc_interface*.
interface_type	string	The underlying interface type of the NVMe interface. This property identifies which of *fc_interface* and *ip_interface* will be further populated.
ip_interface	ip_interface	The attributes specific to an IP-based NVMe interface. This is populated when `interface_type` is *ip_interface*.
name	string	The name of the NVMe interface.
node	node	
svm	svm	SVM, applies only to SVM-scoped objects.
transport_address	string	The transport address of the NVMe interface.
transport_protocols	array[string]	The transport protocols supported by the NVMe interface.
uuid	string	The unique identifier of the NVMe interface.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "fc_interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "wwnn": "20:00:00:50:56:b4:13:a9",
    "wwpn": "20:00:00:50:56:b4:13:a8"
  },
  "interface_type": "string",
  "ip_interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "location": {
      "port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    },
    "name": "lif1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "transport_address": "nn-0x200a00a0989062da:pn-0x200100a0989062da",
    "transport_protocols": [
      "string"
    ],
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The supplied SVM does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

fc_interface

The attributes specific to a Fibre Channel-based NVMe interface.

This is populated when `interface_type` is *fc_interface*.

Name	Type	Description
_links	_links	

Name	Type	Description
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
wwnn	string	The WWNN (world wide node name) of the Fibre Channel NVMe interface.
wwpn	string	The WWPN (world wide port name) of the Fibre Channel NVMe interface.

self_link

Name	Type	Description
self	href	

ip

Name	Type	Description
address	string	IPv4 or IPv6 address

node

Name	Type	Description
name	string	Name of node on which the port is located.

port_reference

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

location

Name	Type	Description
port	port_reference	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

ip_interface

The attributes specific to an IP-based NVMe interface.

This is populated when `interface_type` is *ip_interface*.

Name	Type	Description
_links	self_link	
ip	ip	
location	location	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NVMe services

Protocols NVMe services endpoint overview

Overview

A Non-Volatile Memory Express (NVMe) service defines the properties of the NVMe controller target for an SVM. There can be at most one NVMe service for an SVM. An SVM's NVMe service must be created before NVMe host initiators can connect to the SVM.

The Non-Volatile Memory Express (NVMe) service REST API allows you to create, update, delete, and discover NVMe services for SVMs.

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Creating an NVMe service for an SVM

The simplest way to create an NVMe service is to specify only the SVM, either by name or UUID. By default, the new NVMe service is enabled.

In this example, the `return_records` query parameter is used to retrieve the new NVMe service object in the REST response.

```
# The API:
POST /api/protocols/nvme/services

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/nvme/services?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "bfb1beb0-dc69-11e8-b29f-005056bb7341",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/bfb1beb0-dc69-11e8-b29f-005056bb7341"
        }
      }
    },
    "enabled": true,
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/services/bfb1beb0-dc69-11e8-b29f-
005056bb7341"
      }
    }
  }
]
}
```

Retrieving the NVMe services for all SVMs in the cluster

```
# The API:
GET /api/protocols/nvme/services

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/services' -H 'Accept:
application/hal+json'

# The response:
```

```
{
"records": [
  {
    "svm": {
      "uuid": "ab60c350-dc68-11e8-9711-005056bbe408",
      "name": "svm0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/ab60c350-dc68-11e8-9711-005056bbe408"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/services/ab60c350-dc68-11e8-9711-
005056bbe408"
      }
    }
  },
  {
    "svm": {
      "uuid": "bfb1beb0-dc69-11e8-b29f-005056bb7341",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/bfb1beb0-dc69-11e8-b29f-005056bb7341"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/services/bfb1beb0-dc69-11e8-b29f-
005056bb7341"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/services"
  }
}
}
```

Retrieving details for a specific NVMe service

The NVMe service is identified by the UUID of its SVM.

```
# The API:
GET /api/protocols/nvme/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/services/bfb1beb0-dc69-
11e8-b29f-005056bb7341' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "bfb1beb0-dc69-11e8-b29f-005056bb7341",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/bfb1beb0-dc69-11e8-b29f-005056bb7341"
    }
  }
},
"enabled": true,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/services/bfb1beb0-dc69-11e8-b29f-
005056bb7341"
  }
}
}
```

Disabling an NVMe service

Disabling an NVMe service shuts down all active NVMe connections for the SVM and prevents the creation of new NVMe connections.

The NVMe service to update is identified by the UUID of its SVM.

```
# The API:
PATCH /api/protocols/nvme/services/{svm.uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/protocols/nvme/services/bfb1beb0-
dc69-11e8-b29f-005056bb7341' -H 'Accept: application/hal+json' -d '{
"enabled": "false" }'
```

You can retrieve the NVMe service to confirm the change.

```
# The API:
GET /api/protocols/nvme/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/services/bfb1beb0-dc69-
11e8-b29f-005056bb7341' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "bfb1beb0-dc69-11e8-b29f-005056bb7341",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/bfb1beb0-dc69-11e8-b29f-005056bb7341"
    }
  }
},
"enabled": false,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/services/bfb1beb0-dc69-11e8-b29f-
005056bb7341"
  }
}
}
```

Deleting an NVMe service

The NVMe service must be disabled before it can be deleted. In addition, all NVMe interfaces, subsystems, and subsystem maps associated with the SVM must first be deleted.

The NVMe service to delete is identified by the UUID of its SVM.

```
# The API:
DELETE /api/protocols/nvme/services/{svm.uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/services/bfb1beb0-
dc69-11e8-b29f-005056bb7341' -H 'Accept: application/hal+json'
```

Retrieve NVMe services

GET `/protocols/nvme/services`

Introduced In: 9.6

Retrieves NVMe services.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver nvme show`

Learn more

- DOC /protocols/nvme/services

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7

Name	Type	In	Required	Description
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.tcp.status	string	query	False	Filter by metric.tcp.status • Introduced in: 9.10
metric.tcp.latency.read	integer	query	False	Filter by metric.tcp.latency.read • Introduced in: 9.10
metric.tcp.latency.total	integer	query	False	Filter by metric.tcp.latency.total • Introduced in: 9.10
metric.tcp.latency.write	integer	query	False	Filter by metric.tcp.latency.write • Introduced in: 9.10
metric.tcp.latency.other	integer	query	False	Filter by metric.tcp.latency.other • Introduced in: 9.10

Name	Type	In	Required	Description
metric.tcp.throughput.write	integer	query	False	Filter by metric.tcp.throughput.write • Introduced in: 9.10
metric.tcp.throughput.total	integer	query	False	Filter by metric.tcp.throughput.total • Introduced in: 9.10
metric.tcp.throughput.read	integer	query	False	Filter by metric.tcp.throughput.read • Introduced in: 9.10
metric.tcp.iops.read	integer	query	False	Filter by metric.tcp.iops.read • Introduced in: 9.10
metric.tcp.iops.total	integer	query	False	Filter by metric.tcp.iops.total • Introduced in: 9.10
metric.tcp.iops.write	integer	query	False	Filter by metric.tcp.iops.write • Introduced in: 9.10
metric.tcp.iops.other	integer	query	False	Filter by metric.tcp.iops.other • Introduced in: 9.10

Name	Type	In	Required	Description
metric.tcp.duration	string	query	False	Filter by metric.tcp.duration • Introduced in: 9.10
metric.tcp.timestamp	string	query	False	Filter by metric.tcp.timestamp • Introduced in: 9.10
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7

Name	Type	In	Required	Description
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.fc.status	string	query	False	Filter by metric.fc.status • Introduced in: 9.10
metric.fc.latency.read	integer	query	False	Filter by metric.fc.latency.read • Introduced in: 9.10
metric.fc.latency.total	integer	query	False	Filter by metric.fc.latency.total • Introduced in: 9.10

Name	Type	In	Required	Description
metric.fc.latency.write	integer	query	False	Filter by metric.fc.latency.write • Introduced in: 9.10
metric.fc.latency.other	integer	query	False	Filter by metric.fc.latency.other • Introduced in: 9.10
metric.fc.throughput.write	integer	query	False	Filter by metric.fc.throughput.write • Introduced in: 9.10
metric.fc.throughput.total	integer	query	False	Filter by metric.fc.throughput.total • Introduced in: 9.10
metric.fc.throughput.read	integer	query	False	Filter by metric.fc.throughput.read • Introduced in: 9.10
metric.fc.iops.read	integer	query	False	Filter by metric.fc.iops.read • Introduced in: 9.10
metric.fc.iops.total	integer	query	False	Filter by metric.fc.iops.total • Introduced in: 9.10

Name	Type	In	Required	Description
metric.fc.iops.write	integer	query	False	Filter by metric.fc.iops.write • Introduced in: 9.10
metric.fc.iops.other	integer	query	False	Filter by metric.fc.iops.other • Introduced in: 9.10
metric.fc.duration	string	query	False	Filter by metric.fc.duration • Introduced in: 9.10
metric.fc.timestamp	string	query	False	Filter by metric.fc.timestamp • Introduced in: 9.10
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.fc.status	string	query	False	Filter by statistics.fc.status • Introduced in: 9.10
statistics.fc.iops_raw.read	integer	query	False	Filter by statistics.fc.iops_raw.read • Introduced in: 9.10
statistics.fc.iops_raw.total	integer	query	False	Filter by statistics.fc.iops_raw.total • Introduced in: 9.10
statistics.fc.iops_raw.write	integer	query	False	Filter by statistics.fc.iops_raw.write • Introduced in: 9.10
statistics.fc.iops_raw.other	integer	query	False	Filter by statistics.fc.iops_raw.other • Introduced in: 9.10
statistics.fc.latency_raw.read	integer	query	False	Filter by statistics.fc.latency_raw.read • Introduced in: 9.10

Name	Type	In	Required	Description
statistics.fc.latency_raw.total	integer	query	False	Filter by statistics.fc.latency_raw.total • Introduced in: 9.10
statistics.fc.latency_raw.write	integer	query	False	Filter by statistics.fc.latency_raw.write • Introduced in: 9.10
statistics.fc.latency_raw.other	integer	query	False	Filter by statistics.fc.latency_raw.other • Introduced in: 9.10
statistics.fc.throughput_raw.write	integer	query	False	Filter by statistics.fc.throughput_raw.write • Introduced in: 9.10
statistics.fc.throughput_raw.total	integer	query	False	Filter by statistics.fc.throughput_raw.total • Introduced in: 9.10
statistics.fc.throughput_raw.read	integer	query	False	Filter by statistics.fc.throughput_raw.read • Introduced in: 9.10
statistics.fc.timestamp	string	query	False	Filter by statistics.fc.timestamp • Introduced in: 9.10

Name	Type	In	Required	Description
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
statistics.tcp.status	string	query	False	Filter by statistics.tcp.status • Introduced in: 9.10
statistics.tcp.iops_raw.read	integer	query	False	Filter by statistics.tcp.iops_raw.read • Introduced in: 9.10
statistics.tcp.iops_raw.total	integer	query	False	Filter by statistics.tcp.iops_raw.total • Introduced in: 9.10
statistics.tcp.iops_raw.write	integer	query	False	Filter by statistics.tcp.iops_raw.write • Introduced in: 9.10
statistics.tcp.iops_raw.other	integer	query	False	Filter by statistics.tcp.iops_raw.other • Introduced in: 9.10
statistics.tcp.latency_raw.read	integer	query	False	Filter by statistics.tcp.latency_raw.read • Introduced in: 9.10

Name	Type	In	Required	Description
statistics.tcp.latency_raw.total	integer	query	False	Filter by statistics.tcp.latency_raw.total • Introduced in: 9.10
statistics.tcp.latency_raw.write	integer	query	False	Filter by statistics.tcp.latency_raw.write • Introduced in: 9.10
statistics.tcp.latency_raw.other	integer	query	False	Filter by statistics.tcp.latency_raw.other • Introduced in: 9.10
statistics.tcp.throughput_raw.write	integer	query	False	Filter by statistics.tcp.throughput_raw.write • Introduced in: 9.10
statistics.tcp.throughput_raw.total	integer	query	False	Filter by statistics.tcp.throughput_raw.total • Introduced in: 9.10
statistics.tcp.throughput_raw.read	integer	query	False	Filter by statistics.tcp.throughput_raw.read • Introduced in: 9.10
statistics.tcp.timestamp	string	query	False	Filter by statistics.tcp.timestamp • Introduced in: 9.10

Name	Type	In	Required	Description
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "fc": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "duration": "PT15S",
          "iops": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput": {
            "read": 200,
```

```
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "tcp": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "duration": "PT15S",
          "iops": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
```

```
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "statistics": {
        "fc": {
          "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "tcp": {
          "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "throughput_raw": {
```

```
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
fc	fc	The NVMe/FC portion of the aggregated metrics.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
tcp	tcp	The NVMe/TCP portion of the aggregated metrics.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
fc	fc	The NVMe/FC portion of the aggregated statistics.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
tcp	tcp	The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_service

A Non-Volatile Memory Express (NVMe) service defines the properties of the NVMe controller target for an SVM. There can be at most one NVMe service for an SVM. An SVM's NVMe service must be created before NVMe host initiators can connect to the SVM.

An NVMe service is identified by the UUID of its SVM.

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NVMe service

POST `/protocols/nvme/services`

Introduced In: 9.6

Creates an NVMe service.

Required properties

- `svm.uuid` or `svm.name` - The existing SVM in which to create the NVMe service.

Related ONTAP commands

- `vserver nvme create`

Learn more

- DOC /protocols/nvme/services

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[nvme_service]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127	The cluster lacks a valid NVMe license.
2621462	The supplied SVM does not exist.
2621507	NVMe is not allowed for the specified SVM.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.

Error Code	Description
5374893	The SVM is stopped. The SVM must be running to create an NVMe service.
5376452	Service POST and DELETE are not supported on ASA r2.
72089650	An NVMe service already exists for the specified SVM.
72089900	An NVMe service cannot be creating in an SVM that is configured for a SAN protocol.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_service

A Non-Volatile Memory Express (NVMe) service defines the properties of the NVMe controller target for an SVM. There can be at most one NVMe service for an SVM. An SVM's NVMe service must be created before NVMe host initiators can connect to the SVM.

An NVMe service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete an NVMe service

DELETE `/protocols/nvme/services/{svm.uuid}`

Introduced In: 9.6

Deletes an NVMe service. An NVMe service must be disabled before it can be deleted. In addition, all NVMe interfaces, subsystems, and subsystem maps associated with the SVM must first be deleted.

Related ONTAP commands

- `vserver nvme delete`

Learn more

- DOC /protocols/nvme/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM whose NVMe service is to be deleted.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The supplied SVM does not exist.

Error Code	Description
5376452	Service POST and DELETE are not supported on ASA r2.
72089651	The supplied SVM does not have an NVMe service.
72089653	There are subsystems associated with the NVMe service SVM. The subsystems must be removed before deleting the NVMe service.
72089654	There are NVMe-oF LIFs associated with the NVMe service SVM. The LIFs must be removed before deleting the NVMe service.
72090028	The NVMe service is enabled. The NVMe service must be disabled before it can be deleted.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe service

GET `/protocols/nvme/services/{svm.uuid}`

Introduced In: 9.6

Retrieves an NVMe service.

Related ONTAP commands

- `vserver nvme show`

Learn more

- DOC /protocols/nvme/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM whose NVMe service is to be retrieved.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "fc": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
```

```
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "tcp": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "statistics": {
    "fc": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
```

```
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "tcp": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
```

```
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The supplied SVM does not exist.
72089651	The supplied SVM does not have an NVMe service.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
fc	fc	The NVMe/FC portion of the aggregated metrics.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
tcp	tcp	The NVMe/TCP portion of the aggregated metrics.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
fc	fc	The NVMe/FC portion of the aggregated statistics.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
tcp	tcp	The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an NVMe service

PATCH `/protocols/nvme/services/{svm.uuid}`

Introduced In: 9.6

Updates an NVMe service.

Related ONTAP commands

- `vserver nvme modify`

Learn more

- DOC /protocols/nvme/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM whose NVMe service is to be updated.

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127	The cluster lacks a valid NVMe license.
2621462	The supplied SVM does not exist.
5374893	The SVM is stopped. The SVM must be running to create an NVMe service.
72089651	The supplied SVM does not have an NVMe service.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

tcp

The NVMe/TCP portion of the aggregated statistics.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_service

A Non-Volatile Memory Express (NVMe) service defines the properties of the NVMe controller target for an SVM. There can be at most one NVMe service for an SVM. An SVM's NVMe service must be created before NVMe host initiators can connect to the SVM.

An NVMe service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the NVMe service. The NVMe service can be disabled to block all NVMe connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve NVMe protocol historical performance metrics

GET `/protocols/nvme/services/{svm.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for the NVMe protocol service of an SVM.

Parameters

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
timestamp	string	query	False	Filter by timestamp
fc.iops.read	integer	query	False	Filter by fc.iops.read • Introduced in: 9.10
fc.iops.total	integer	query	False	Filter by fc.iops.total • Introduced in: 9.10
fc.iops.write	integer	query	False	Filter by fc.iops.write • Introduced in: 9.10

Name	Type	In	Required	Description
fc.iops.other	integer	query	False	Filter by fc.iops.other • Introduced in: 9.10
fc.duration	string	query	False	Filter by fc.duration • Introduced in: 9.10
fc.throughput.write	integer	query	False	Filter by fc.throughput.write • Introduced in: 9.10
fc.throughput.total	integer	query	False	Filter by fc.throughput.total • Introduced in: 9.10
fc.throughput.read	integer	query	False	Filter by fc.throughput.read • Introduced in: 9.10
fc.latency.read	integer	query	False	Filter by fc.latency.read • Introduced in: 9.10
fc.latency.total	integer	query	False	Filter by fc.latency.total • Introduced in: 9.10
fc.latency.write	integer	query	False	Filter by fc.latency.write • Introduced in: 9.10

Name	Type	In	Required	Description
fc.latency.other	integer	query	False	Filter by fc.latency.other • Introduced in: 9.10
fc.status	string	query	False	Filter by fc.status • Introduced in: 9.10
tcp.iops.read	integer	query	False	Filter by tcp.iops.read • Introduced in: 9.10
tcp.iops.total	integer	query	False	Filter by tcp.iops.total • Introduced in: 9.10
tcp.iops.write	integer	query	False	Filter by tcp.iops.write • Introduced in: 9.10
tcp.iops.other	integer	query	False	Filter by tcp.iops.other • Introduced in: 9.10
tcp.duration	string	query	False	Filter by tcp.duration • Introduced in: 9.10
tcp.throughput.write	integer	query	False	Filter by tcp.throughput.write • Introduced in: 9.10

Name	Type	In	Required	Description
tcp.throughput.total	integer	query	False	Filter by tcp.throughput.total • Introduced in: 9.10
tcp.throughput.read	integer	query	False	Filter by tcp.throughput.read • Introduced in: 9.10
tcp.latency.read	integer	query	False	Filter by tcp.latency.read • Introduced in: 9.10
tcp.latency.total	integer	query	False	Filter by tcp.latency.total • Introduced in: 9.10
tcp.latency.write	integer	query	False	Filter by tcp.latency.write • Introduced in: 9.10
tcp.latency.other	integer	query	False	Filter by tcp.latency.other • Introduced in: 9.10
tcp.status	string	query	False	Filter by tcp.status • Introduced in: 9.10
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
status	string	query	False	Filter by status
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
svm.uuid	string	path	True	The unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "fc": {
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        }
      },
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
```

```
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "svm": {
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tcp": {
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        }
      },
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.

Error Code	Description
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

records

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
fc	fc	The NVMe/FC portion of the aggregated metrics.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
tcp	tcp	The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the NVMe protocol service of an SVM for a specific time

GET `/protocols/nvme/services/{svm.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical performance metrics for the NVMe protocol service of an SVM for a specific time.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM.

Name	Type	In	Required	Description
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
fc	fc	The NVMe/FC portion of the aggregated metrics.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
tcp	tcp	The NVMe/TCP portion of the aggregated metrics.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "fc": {
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    }
  },
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "svm": {
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tcp": {
    "duration": "PT15S",
    "iops": {
      "read": 200,
```

```
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    }
  },
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

fc

The NVMe/FC portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

tcp

The NVMe/TCP portion of the aggregated metrics.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View NVMe subsystem controllers

Protocols NVMe subsystem-controllers endpoint overview

Overview

Non-Volatile Memory Express (NVMe) subsystem controllers represent dynamic connections between hosts and a storage solution.

The NVMe subsystem controllers REST API provides information about connected hosts.

Examples

Retrieving the NVMe subsystem controllers for the entire system

```
# The API:
GET /api/protocols/nvme/subsystem-controllers

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystem-controllers'
-H 'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
```

```
      "uuid": "14875240-2594-11e9-abde-00a098984313",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_0",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/14875240-2594-11e9-abde-
00a098984313"
        }
      }
    },
    "id": "0040h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-
11e9-abde-00a098984313/0040h"
      }
    }
  },
  {
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
      "uuid": "14875240-2594-11e9-abde-00a098984313",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_0",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/14875240-2594-11e9-abde-
00a098984313"
        }
      }
    },
    "id": "0041h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-
11e9-abde-00a098984313/0041h"
      }
    }
  },
  {
```

```
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
      "uuid": "1489d0d5-2594-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_1",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/1489d0d5-2594-11e9-94c4-
00a0989a1c8e"
        }
      }
    },
    "id": "0040h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/1489d0d5-2594-
11e9-94c4-00a0989a1c8e/0040h"
      }
    }
  },
  {
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
      "uuid": "1489d0d5-2594-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_1",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/1489d0d5-2594-11e9-94c4-
00a0989a1c8e"
        }
      }
```

```
    },
    "id": "0041h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/1489d0d5-2594-
11e9-94c4-00a0989a1c8e/0041h"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/subsystem-controllers"
  }
}
}
```

Retrieving the NVMe subsystem controllers for a specific subsystem

```
# The API:
GET /api/protocols/nvme/subsystem-controllers

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystem-
controllers?subsystem.uuid=14875240-2594-11e9-abde-00a098984313' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
      "uuid": "14875240-2594-11e9-abde-00a098984313",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_0",
```

```
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/14875240-2594-11e9-abde-
00a098984313"
        }
      }
    },
    "id": "0040h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-
11e9-abde-00a098984313/0040h"
      }
    }
  },
  {
    "svm": {
      "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
      "name": "symmcon_fcnvme_vserver_0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
        }
      }
    },
    "subsystem": {
      "uuid": "14875240-2594-11e9-abde-00a098984313",
      "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_0",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/14875240-2594-11e9-abde-
00a098984313"
        }
      }
    },
    "id": "0041h",
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-
11e9-abde-00a098984313/0041h"
      }
    }
  }
],
"num_records": 2,
"_links": {
```

```
  "self": {
    "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-11e9-
abde-00a098984313"
  }
}
}
```

Retrieving a specific NVMe subsystem controller

```
# The API:
GET /api/protocols/nvme/subsystem-controllers/{subsystem.uuid}/{id}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystem-
controllers/14875240-2594-11e9-abde-00a098984313/0040h' -H 'Accept:
application/hal+json'

# The response:
{
"svm": {
  "uuid": "f0f5b928-2593-11e9-94c4-00a0989a1c8e",
  "name": "symmcon_fcnvme_vserver_0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/f0f5b928-2593-11e9-94c4-00a0989a1c8e"
    }
  }
},
"subsystem": {
  "uuid": "14875240-2594-11e9-abde-00a098984313",
  "name": "symmcon_symmcon_fcnvme_vserver_0_subsystem_0",
  "_links": {
    "self": {
      "href": "/api/protocols/nvme/subsystems/14875240-2594-11e9-abde-
00a098984313"
    }
  }
},
"id": "0040h",
"interface": {
  "name": "symmcon_lif_fcnvme_symmcon_fcnvme_vserver_0_3a_0",
  "uuid": "fa1c5941-2593-11e9-94c4-00a0989a1c8e",
  "transport_address": "nn-0x200400a0989a1c8d:pn-0x200500a0989a1c8d",
  "_links": {
```

```
    "self": {
      "href": "/api/protocols/nvme/interfaces/fa1c5941-2593-11e9-94c4-
00a0989a1c8e"
    }
  }
},
"node": {
  "name": "ssan-8040-94a",
  "uuid": "ebf66f05-2590-11e9-abde-00a098984313",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/ebf66f05-2590-11e9-abde-00a098984313"
    }
  }
},
"host": {
  "transport_address": "nn-0x20000090fae00806:pn-0x10000090fae00806",
  "nqn": "nqn.2014-08.org.nvmexpress:uuid:c2846cb1-89d2-4020-a3b0-
71ce907b4eef",
  "id": "b8546ca6097349e5b1558dc154fc073b"
},
"io_queue": {
  "count": 4,
  "depth": [
    32,
    32,
    32,
    32
  ]
},
"admin_queue": {
  "depth": 32
},
"dh_hmac_chap": {
  "mode": "none"
},
"keep_alive_timeout": 4000,
"digest.header": true,
"digest.data": false,
"tls": {
  "key_type": "configured",
  "psk_identity": "NVMe1R01 nqn.2014-08.org.nvmexpress:uuid:c2846cb1-89d2-
4020-a3b0-71ce907b4eef nqn.1992-
08.com.netapp:sn.ca3cae02070811ef9a53005056bb9001:subsystem.ss1
c9X3RurQxGiGa76Tpk2tirifrUhHmVp035MOrtHXnAU=",
  "cipher": "tls_aes_128_gcm_sha256"
```

```
},
"_links": {
  "self": {
    "href": "/api/protocols/nvme/subsystem-controllers/14875240-2594-11e9-abde-00a098984313/0040h"
  }
}
}
```


Retrieve NVMe subsystem controllers

GET `/protocols/nvme/subsystem-controllers`

Introduced In: 9.6

Retrieves NVMe subsystem controllers.

Related ONTAP commands

- `vserver nvme subsystem controller show`

Learn more

- DOC /protocols/nvme/subsystem-controllers

Parameters

Name	Type	In	Required	Description
digest.header	boolean	query	False	Filter by digest.header • Introduced in: 9.15
digest.data	boolean	query	False	Filter by digest.data • Introduced in: 9.15
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
dh_hmac_chap.group_size	string	query	False	Filter by dh_hmac_chap.group_size • Introduced in: 9.12

Name	Type	In	Required	Description
dh_hmac_chap.hash_function	string	query	False	Filter by dh_hmac_chap.hash_function • Introduced in: 9.12
dh_hmac_chap.mode	string	query	False	Filter by dh_hmac_chap.mode • Introduced in: 9.12
keep_alive_timeout	integer	query	False	Filter by keep_alive_timeout • Introduced in: 9.14
interface.uuid	string	query	False	Filter by interface.uuid
interface.transport_address	string	query	False	Filter by interface.transport_address
interface.name	string	query	False	Filter by interface.name
transport_protocol	string	query	False	Filter by transport_protocol • Introduced in: 9.16
subsystem.name	string	query	False	Filter by subsystem.name • maxLength: 64 • minLength: 1
subsystem.uuid	string	query	False	Filter by subsystem.uuid
node.uuid	string	query	False	Filter by node.uuid

Name	Type	In	Required	Description
node.name	string	query	False	Filter by node.name
tls.key_type	string	query	False	Filter by tls.key_type • Introduced in: 9.16
tls.cipher	string	query	False	Filter by tls.cipher • Introduced in: 9.16
tls.psk_identity	string	query	False	Filter by tls.psk_identity • Introduced in: 9.16
admin_queue.depth	integer	query	False	Filter by admin_queue.depth
io_queue.depth	integer	query	False	Filter by io_queue.depth
io_queue.count	integer	query	False	Filter by io_queue.count
id	string	query	False	Filter by id
host.nqn	string	query	False	Filter by host.nqn • maxLength: 223 • minLength: 1
host.id	string	query	False	Filter by host.id
host.transport_address	string	query	False	Filter by host.transport_address
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_controller]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "admin_queue": {
        "depth": 0
      },
      "dh_hmac_chap": {
        "group_size": "string",
        "hash_function": "string",
        "mode": "bidirectional"
      },
      "host": {
        "id": "b8546ca6097349e5b1558dc154fc073b",
        "nqn": "nqn.2014-08.org.nvmexpress:uuid:c2846cb1-89d2-4020-
a3b0-71ce907b4eef",
        "transport_address": "nn-0x20000090fae00806:pn-
0x10000090fae00806"
      },
      "id": "0040h",
      "interface": {
        "name": "lif1",
        "transport_address": "nn-0x200400a0989a1c8d:pn-
0x200500a0989a1c8d",
        "uuid": "fa1c5941-2593-11e9-94c4-00a0989a1c8e"
      },
      "io_queue": {
        "count": 0,
        "depth": [
          "integer"
        ]
```

```
      },
      "keep_alive_timeout": 1500,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "subsystem": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "tls": {
        "cipher": "tls_aes_128_gcm_sha256",
        "key_type": "configured",
        "psk_identity": "NVMe1R01 nqn.2014-
08.org.nvmexpress:uuid:713b3816-f9bf-ba43-b95a-5e4bf8c726e9 nqn.1992-
08.com.netapp:sn.76f9d9bfb96511eea95e005056bb72b2:subsystem.ss1
mS1A7nrooevA9ZqAM09fQzWQlB2UZRt0BE1X4vINjY0=:"
      },
      "transport_protocol": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

admin_queue

Name	Type	Description
depth	integer	The depth of the admin queue for the controller.

dh_hmac_chap

A container for properties of the NVMe in-band authentication DH-HMAC-CHAP protocol used by the the host connection to the controller.

Name	Type	Description
group_size	string	The Diffie-Hellman group size used for NVMe in-band authentication. This property is populated only when NVMe in-band authentication was performed for the NVMe-oF transport connection.
hash_function	string	The hash function used for NVMe in-band authentication. This property is populated only when NVMe in-band authentication was performed for the NVMe-oF transport connection.

Name	Type	Description
mode	string	The NVMe in-band authentication mode used for the host connection. When set to: • none: Neither the host nor controller was authenticated. • unidirectional: The controller authenticated the host. • bidirectional: The controller authenticated the host and the host authenticated the controller.

digest

Digests are properties of NVMe controllers created over the NVMe/TCP transport protocol. The usage of digests is negotiated between the host and the controller during connection setup. ONTAP enables digests only if the host requests them. The header digest is the crc32 checksum of the header portion of the NVMe/TCP PDU. The data digest is the crc32 checksum of the data portion of the NVMe/TCP PDU.

If a digest is enabled, upon receiving an NVMe/TCP PDU, ONTAP calculates the crc32 checksum of the associated portion of the PDU and compares it with the digest value present in the transmitted PDU. If there is a mismatch, ONTAP returns an error and destroys the controller.

Name	Type	Description
data	boolean	Reports if digests are enabled for the data portion of the PDU.
header	boolean	Reports if digests are enabled for the header portion of the PDU.

host

Properties of the connected host.

Name	Type	Description
id	string	The host identifier registered with the controller.
nqn	string	The NVMe qualified name of the host.
transport_address	string	The transport address of the host.

interface

The logical interface through which the host is connected.

Name	Type	Description
name	string	The name of the logical interface.
transport_address	string	The transport address of the logical interface.
uuid	string	The unique identifier of the logical interface.

io_queue

Properties of the I/O queues available to the controller.

Name	Type	Description
count	integer	The number of I/O queues available to the controller.
depth	array[integer]	The depths of the I/O queues.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tls

A container for properties that describe the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem.

Name	Type	Description
cipher	string	The cipher suite used for the transport by the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. This property is populated only when encryption is in use for the transport connection.
key_type	string	The method by which the TLS pre-shared key (PSK) was obtained when establishing the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. Possible values: • `none` - TLS encryption is not configured for the host connection. • `configured` - A user supplied PSK was used for the encrypted NVMe/TCP-TLS transport connection between the host and the NVMe subsystem.

Name	Type	Description
psk_identity	string	The TLS PSK identity supplied by the host when establishing the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. This property is populated only when encryption is in use for the transport connection.

nvme_subsystem_controller

A Non-Volatile Memory Express (NVMe) subsystem controller represents a connection between a host and a storage solution.

An NVMe subsystem controller is identified by the NVMe subsystem UUID and the controller ID.

Name	Type	Description
_links	_links	
admin_queue	admin_queue	
dh_hmac_chap	dh_hmac_chap	A container for properties of the NVMe in-band authentication DH-HMAC-CHAP protocol used by the the host connection to the controller.

Name	Type	Description
digest	digest	Digests are properties of NVMe controllers created over the NVMe/TCP transport protocol. The usage of digests is negotiated between the host and the controller during connection setup. ONTAP enables digests only if the host requests them. The header digest is the crc32 checksum of the header portion of the NVMe/TCP PDU. The data digest is the crc32 checksum of the data portion of the NVMe/TCP PDU. If a digest is enabled, upon receiving an NVMe/TCP PDU, ONTAP calculates the crc32 checksum of the associated portion of the PDU and compares it with the digest value present in the transmitted PDU. If there is a mismatch, ONTAP returns an error and destroys the controller. • readOnly: 1 • Introduced in: 9.15
host	host	Properties of the connected host.
id	string	The identifier of the subsystem controller. This field consists of 4 zero-filled hexadecimal digits followed by an 'h'.
interface	interface	The logical interface through which the host is connected.
io_queue	io_queue	Properties of the I/O queues available to the controller.

Name	Type	Description
keep_alive_timeout	integer	The keep-alive timeout value for the controller and all of its host connections, in milliseconds. If the NVMe controller does not receive a keep-alive request or an I/O request within the timeout window, the NVMe controller terminates its admin queue and I/O queue connections leading to NVMe controller teardown. If the NVMe host does not receive a response to a keep-alive request or an I/O request within the timeout window, the NVMe host initiates a connection disconnect.
node	node	
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.
svm	svm	SVM, applies only to SVM-scoped objects.
tls	tls	A container for properties that describe the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem.
transport_protocol	string	Transport Protocol

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe subsystem controller

GET `/protocols/nvme/subsystem-controllers/{subsystem.uuid}/{id}`

Introduced In: 9.6

Retrieves an NVMe subsystem controller.

Related ONTAP commands

- `vserver nvme subsystem controller show`

Learn more

- DOC /protocols/nvme/subsystem-controllers

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
id	string	path	True	The unique identifier of the NVMe subsystem controller.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
admin_queue	admin_queue	
dh_hmac_chap	dh_hmac_chap	A container for properties of the NVMe in-band authentication DH-HMAC-CHAP protocol used by the the host connection to the controller.
digest	digest	Digests are properties of NVMe controllers created over the NVMe/TCP transport protocol. The usage of digests is negotiated between the host and the controller during connection setup. ONTAP enables digests only if the host requests them. The header digest is the crc32 checksum of the header portion of the NVMe/TCP PDU. The data digest is the crc32 checksum of the data portion of the NVMe/TCP PDU. If a digest is enabled, upon receiving an NVMe/TCP PDU, ONTAP calculates the crc32 checksum of the associated portion of the PDU and compares it with the digest value present in the transmitted PDU. If there is a mismatch, ONTAP returns an error and destroys the controller. • readOnly: 1 • Introduced in: 9.15
host	host	Properties of the connected host.
id	string	The identifier of the subsystem controller. This field consists of 4 zero-filled hexadecimal digits followed by an 'h'.
interface	interface	The logical interface through which the host is connected.
io_queue	io_queue	Properties of the I/O queues available to the controller.

Name	Type	Description
keep_alive_timeout	integer	The keep-alive timeout value for the controller and all of its host connections, in milliseconds. If the NVMe controller does not receive a keep-alive request or an I/O request within the timeout window, the NVMe controller terminates its admin queue and I/O queue connections leading to NVMe controller teardown. If the NVMe host does not receive a response to a keep-alive request or an I/O request within the timeout window, the NVMe host initiates a connection disconnect.
node	node	
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.
svm	svm	SVM, applies only to SVM-scoped objects.
tls	tls	A container for properties that describe the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem.
transport_protocol	string	Transport Protocol

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "admin_queue": {
    "depth": 0
  },
  "dh_hmac_chap": {
    "group_size": "string",
    "hash_function": "string",
    "mode": "bidirectional"
  },
  "host": {
    "id": "b8546ca6097349e5b1558dc154fc073b",
    "nqn": "nqn.2014-08.org.nvmexpress:uuid:c2846cb1-89d2-4020-a3b0-
71ce907b4eef",
    "transport_address": "nn-0x20000090fae00806:pn-0x10000090fae00806"
  },
  "id": "0040h",
  "interface": {
    "name": "lif1",
    "transport_address": "nn-0x200400a0989a1c8d:pn-0x200500a0989a1c8d",
    "uuid": "fa1c5941-2593-11e9-94c4-00a0989a1c8e"
  },
  "io_queue": {
    "count": 0,
    "depth": [
      "integer"
    ]
  },
  "keep_alive_timeout": 1500,
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "subsystem": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tls": {
    "cipher": "tls_aes_128_gcm_sha256",
    "key_type": "configured",
    "psk_identity": "NVMe1R01 nqn.2014-08.org.nvmexpress:uuid:713b3816-
f9bf-ba43-b95a-5e4bf8c726e9 nqn.1992-
08.com.netapp:sn.76f9d9bfb96511eea95e005056bb72b2:subsystem.ss1
mS1A7nrooevA9ZqAM09fQzWQlB2UZRt0BE1X4vINjY0=:"
  },
  "transport_protocol": "string"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The supplied subsystem identifier does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

admin_queue

Name	Type	Description
depth	integer	The depth of the admin queue for the controller.

dh_hmac_chap

A container for properties of the NVMe in-band authentication DH-HMAC-CHAP protocol used by the the host connection to the controller.

Name	Type	Description
group_size	string	The Diffie-Hellman group size used for NVMe in-band authentication. This property is populated only when NVMe in-band authentication was performed for the NVMe-oF transport connection.
hash_function	string	The hash function used for NVMe in-band authentication. This property is populated only when NVMe in-band authentication was performed for the NVMe-oF transport connection.

Name	Type	Description
mode	string	The NVMe in-band authentication mode used for the host connection. When set to: • none: Neither the host nor controller was authenticated. • unidirectional: The controller authenticated the host. • bidirectional: The controller authenticated the host and the host authenticated the controller.

digest

Digests are properties of NVMe controllers created over the NVMe/TCP transport protocol. The usage of digests is negotiated between the host and the controller during connection setup. ONTAP enables digests only if the host requests them. The header digest is the crc32 checksum of the header portion of the NVMe/TCP PDU. The data digest is the crc32 checksum of the data portion of the NVMe/TCP PDU.

If a digest is enabled, upon receiving an NVMe/TCP PDU, ONTAP calculates the crc32 checksum of the associated portion of the PDU and compares it with the digest value present in the transmitted PDU. If there is a mismatch, ONTAP returns an error and destroys the controller.

Name	Type	Description
data	boolean	Reports if digests are enabled for the data portion of the PDU.
header	boolean	Reports if digests are enabled for the header portion of the PDU.

host

Properties of the connected host.

Name	Type	Description
id	string	The host identifier registered with the controller.
nqn	string	The NVMe qualified name of the host.
transport_address	string	The transport address of the host.

interface

The logical interface through which the host is connected.

Name	Type	Description
name	string	The name of the logical interface.
transport_address	string	The transport address of the logical interface.
uuid	string	The unique identifier of the logical interface.

io_queue

Properties of the I/O queues available to the controller.

Name	Type	Description
count	integer	The number of I/O queues available to the controller.
depth	array[integer]	The depths of the I/O queues.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tls

A container for properties that describe the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem.

Name	Type	Description
cipher	string	The cipher suite used for the transport by the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. This property is populated only when encryption is in use for the transport connection.
key_type	string	The method by which the TLS pre-shared key (PSK) was obtained when establishing the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. Possible values: • `none` - TLS encryption is not configured for the host connection. • `configured` - A user supplied PSK was used for the encrypted NVMe/TCP-TLS transport connection between the host and the NVMe subsystem.

Name	Type	Description
psk_identity	string	The TLS PSK identity supplied by the host when establishing the encrypted NVMe/TCP transport connection between the host and the NVMe subsystem. This property is populated only when encryption is in use for the transport connection.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NVMe subsystem maps

Protocols NVMe subsystem-maps endpoint overview

Overview

An NVMe subsystem map is an association of an NVMe namespace with an NVMe subsystem. When an NVMe namespace is mapped to an NVMe subsystem, the NVMe subsystem's hosts are granted access to the NVMe namespace. The relationship between an NVMe subsystem and an NVMe namespace is one subsystem to many namespaces.

The NVMe subsystem map REST API allows you to create, delete and discover NVMe subsystem maps.

Examples

Creating an NVMe subsystem map

```
# The API:
POST /api/protocols/nvme/subsystem-maps

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/nvme/subsystem-maps' -H
'Accept: application/hal+json' -d '{ "svm": { "name": "svm1" },
"subsystem": { "name": "subsystem1" }, "namespace": { "name":
"/vol/vol1/namespace1" } }'
```

Retrieving all of the NVMe subsystem maps

```
# The API:
GET /api/protocols/nvme/subsystem-maps

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystem-maps' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "0e91b214-fe40-11e8-91a0-005056a79967",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0e91b214-fe40-11e8-91a0-005056a79967"
        }
      }
    },
    "subsystem": {
      "uuid": "580a6b1e-fe43-11e8-91a0-005056a79967",
      "name": "subsystem1",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/580a6b1e-fe43-11e8-91a0-
005056a79967"
        }
      }
    },
```

```
    "namespace": {
      "uuid": "3ccdedc6-2519-4206-bc1f-b0f4adab6f89",
      "name": "/vol/vol1/namespace1",
      "_links": {
        "self": {
          "href": "/api/storage/namespaces/3ccdedc6-2519-4206-bc1f-
b0f4adab6f89"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-maps/580a6b1e-fe43-11e8-
91a0-005056a79967/3ccdedc6-2519-4206-bc1f-b0f4adab6f89"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/protocols/nvme/subsystem-maps"
  }
}
}
```

Retrieving a specific NVMe subsystem map

The NVMe subsystem map is identified by the UUID of the NVMe subsystem followed by the UUID of the NVMe namespace.

```
# The API:
GET /api/protocols/nvme/subsystem-maps/{subsystem.uuid}/{namespace.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystem-maps/580a6b1e-
fe43-11e8-91a0-005056a79967/3ccdedc6-2519-4206-bc1f-b0f4adab6f89' -H
'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "0e91b214-fe40-11e8-91a0-005056a79967",
  "name": "svm1",
```

```
  "_links": {
    "self": {
      "href": "/api/svm/svms/0e91b214-fe40-11e8-91a0-005056a79967"
    }
  }
},
"subsystem": {
  "uuid": "580a6b1e-fe43-11e8-91a0-005056a79967",
  "name": "subsystem1",
  "_links": {
    "self": {
      "href": "/api/protocols/nvme/subsystems/580a6b1e-fe43-11e8-91a0-
005056a79967"
    }
  }
},
"namespace": {
  "uuid": "3ccdedc6-2519-4206-bc1f-b0f4adab6f89",
  "name": "/vol/vol1/namespace1",
  "node": {
    "name": "node1",
    "uuid": "012b4508-67d6-4788-8c2d-801f254ce976",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/012b4508-67d6-4788-8c2d-801f254ce976"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/storage/namespaces/3ccdedc6-2519-4206-bc1f-
b0f4adab6f89"
    }
  }
},
"nsid": "00000001h",
"_links": {
  "self": {
    "href": "/api/protocols/nvme/subsystem-maps/580a6b1e-fe43-11e8-91a0-
005056a79967/3ccdedc6-2519-4206-bc1f-b0f4adab6f89"
  }
}
}
```

Deleting an NVMe subsystem map

```
# The API:
DELETE /api/protocols/nvme/subsystem-
maps/{subsystem.uuid}/{namespace.uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/subsystem-
maps/580a6b1e-fe43-11e8-91a0-005056a79967/3ccdedc6-2519-4206-bc1f-
b0f4adab6f89' -H 'Accept: application/hal+json'
```

Retrieve NVMe subsystem maps

GET `/protocols/nvme/subsystem-maps`

Introduced In: 9.6

Retrieves NVMe subsystem maps.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `anagrpid`

Related ONTAP commands

- `vserver nvme subsystem map show`

Learn more

- DOC /protocols/nvme/subsystem-maps

Parameters

Name	Type	In	Required	Description
subsystem.name	string	query	False	Filter by subsystem.name • maxLength: 64 • minLength: 1
subsystem.uuid	string	query	False	Filter by subsystem.uuid

Name	Type	In	Required	Description
namespace.name	string	query	False	Filter by namespace.name
namespace.node.uuid	string	query	False	Filter by namespace.node.uuid
namespace.node.name	string	query	False	Filter by namespace.node.name
namespace.uuid	string	query	False	Filter by namespace.uuid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
nsid	string	query	False	Filter by nsid
anagrpid	string	query	False	Filter by anagrpid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_map]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anagrpid": "00103050h",
      "namespace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/vol1/namespace1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "nsid": "00000001h",
      "subsystem": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "subsystem1",
```

```
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

namespace

The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe namespace. Valid in POST. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	

Name	Type	Description
uuid	string	The unique identifier of the NVMe namespace. Valid in POST.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem_map

An NVMe subsystem map is an association of an NVMe namespace with an NVMe subsystem. When an NVMe namespace is mapped to an NVMe subsystem, the NVMe subsystem's hosts are granted access to the NVMe namespace. The relationship between an NVMe subsystem and an NVMe namespace is one subsystem to many namespaces.

Name	Type	Description
_links	_links	

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
namespace	namespace	The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NVMe subsystem map

POST `/protocols/nvme/subsystem-maps`

Introduced In: 9.6

Creates an NVMe subsystem map.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the NVMe subsystem map.
- `namespace.uuid` or `namespace.name` - Existing NVMe namespace to map to the specified NVme subsystem.
- `subsystem.uuid` or `subsystem.name` - Existing NVMe subsystem to map to the specified NVMe namespace.

Related ONTAP commands

- `vserver nvme subsystem map add`

Learn more

- DOC /protocols/nvme/subsystem-maps

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
namespace	namespace	The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "anagrpid": "00103050h",
  "namespace": {
    "name": "/vol/vol1/namespace1",
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "nsid": "00000001h",
  "subsystem": {
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_map]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "anagrpid": "00103050h",
      "namespace": {
        "name": "/vol/vol1/namespace1",
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "nsid": "00000001h",
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374127	The specified namespace name is invalid.

Error Code	Description
5376461	The specified namespace name is invalid.
5376462	The specified namespace name is too long.
72089731	The specified NVMe namespace does not exist.
72089790	The supplied NVMe namespace is already mapped to the supplied NVMe subsystem.
72089793	An NVMe namespace in a snapshot cannot be mapped.
72089799	The NVMe namespace is the destination of an ongoing restore operation and is inaccessible for I/O and management.
72089902	A node does not have an NVMe interface configured.
72089903	Multiple nodes do not have an NVMe interface configured.
72089904	The aggregate must be given back to its home node prior to mapping the NVMe namespace it contains.
72090001	The NVMe subsystem specified by `subsystem.uuid` was not found.
72090005	The specified `namespace.uuid` and `namespace.name` refer to different NVMe namespaces.
72090006	The NVMe namespace specified by `namespace.uuid` was not found.
72090007	The NVMe namespace specified by `namespace.name` was not found.
72090020	The specified `subsystem.uuid` and `subsystem.name` refer to different NVMe subsystems.
72090021	The NVMe subsystem specified by `subsystem.name` was not found.
72091102	The NVMe namespace is part of a SnapMirror active sync relationship that has a different SVM peering relationship than the subsystem.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

namespace

The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.

Name	Type	Description
name	string	The name of the NVMe namespace. Valid in POST. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	
uuid	string	The unique identifier of the NVMe namespace. Valid in POST.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.

Name	Type	Description
name	string	The name of the NVMe subsystem.

Name	Type	Description
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem_map

An NVMe subsystem map is an association of an NVMe namespace with an NVMe subsystem. When an NVMe namespace is mapped to an NVMe subsystem, the NVMe subsystem's hosts are granted access to the NVMe namespace. The relationship between an NVMe subsystem and an NVMe namespace is one subsystem to many namespaces.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
namespace	namespace	The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.

Name	Type	Description
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an NVMe subsystem map

DELETE `/protocols/nvme/subsystem-maps/{subsystem.uuid}/{namespace.uuid}`

Introduced In: 9.6

Deletes an NVMe subsystem map.

Related ONTAP commands

- `vserver nvme subsystem map remove`

Learn more

- DOC /protocols/nvme/subsystem-maps

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
namespace.uuid	string	path	True	The unique identifier of the NVMe namespace.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_map]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anagrpid": "00103050h",
      "namespace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/vol1/namespace1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "nsid": "00000001h",
      "subsystem": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "subsystem1",
```

```
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090019	The specified NVMe namespace is not mapped to the specified NVMe subsystem.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

namespace

The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe namespace. Valid in POST. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	

Name	Type	Description
uuid	string	The unique identifier of the NVMe namespace. Valid in POST.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem_map

An NVMe subsystem map is an association of an NVMe namespace with an NVMe subsystem. When an NVMe namespace is mapped to an NVMe subsystem, the NVMe subsystem's hosts are granted access to the NVMe namespace. The relationship between an NVMe subsystem and an NVMe namespace is one subsystem to many namespaces.

Name	Type	Description
_links	_links	

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
namespace	namespace	The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe subsystem map

GET `/protocols/nvme/subsystem-maps/{subsystem.uuid}/{namespace.uuid}`

Introduced In: 9.6

Retrieves an NVMe subsystem map.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `anagrpid`

Related ONTAP commands

- `vserver nvme subsystem map show`

Learn more

- DOC /protocols/nvme/subsystem-maps

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
namespace.uuid	string	path	True	The unique identifier of the NVMe namespace.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h". There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
namespace	namespace	The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "anagrpid": "00103050h",
  "namespace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "/vol/vol1/namespace1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "nsid": "00000001h",
  "subsystem": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090019	The specified NVMe namespace is not mapped to the specified NVMe subsystem.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

namespace

The NVMe namespace to which the NVMe subsystem is mapped. Required in POST by supplying either the UUID, name, or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe namespace. Valid in POST. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	
uuid	string	The unique identifier of the NVMe namespace. Valid in POST.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped. Required in POST by supplying either `subsystem.uuid`, `subsystem.name` or both.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NVMe subsystems

Protocols NVMe subsystems endpoint overview

Overview

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

The NVMe subsystem REST API allows you to create, update, delete, and discover NVMe subsystems as well as add and remove NVMe hosts that can access the subsystem and associated namespaces.

Examples

Creating an NVMe subsystem

```
# The API:
POST /api/protocols/nvme/subsystems

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/nvme/subsystems' -H 'Accept:
application/json' -d '{ "svm": { "name": "svm1" }, "name": "subsystem1",
"os_type": "linux" }'
```

Creating an NVMe subsystem with multiple NVMe subsystem hosts

```
# The API:
POST /api/protocols/nvme/subsystems

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/nvme/subsystems' -H 'Accept:
application/json' -d '{ "svm": { "name": "svm1" }, "name": "subsystem2",
"os_type": "vmware", "hosts": [ { "nqn": "nqn.1992-01.example.com:host1"
}, { "nqn": "nqn.1992-01.example.com:host2" } ] }'
```

Retrieving all NVMe subsystems

```
# The API:
GET /api/protocols/nvme/subsystems

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystems' -H 'Accept:
application/json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm1",
    },
    "uuid": "acde901a-a379-4a91-9ea6-1b728ed6696f",
    "name": "subsystem1",
  },
  {
    "svm": {
      "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm1",
    },
    "uuid": "bcde901a-a379-4a91-9ea6-1b728ed6696f",
    "name": "subsystem2",
  }
],
"num_records": 2,
}
```

Retrieving all NVMe subsystems with OS type *linux*

Note that the `os_type` query parameter is used to perform the query.

```
# The API:
GET /api/protocols/nvme/subsystems

# The call:
curl -X GET 'https://<mgmt-
ip>/api/protocols/nvme/subsystems?os_type=linux' -H 'Accept:
application/json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm1",
    },
    "uuid": "acde901a-a379-4a91-9ea6-1b728ed6696f",
    "name": "subsystem1",
    "os_type": "linux",
  }
],
"num_records": 1,
}
```

Retrieving a specific NVMe subsystem

```
# The API:
GET /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f' -H 'Accept: application/json'

# The response:
{
"svm": {
  "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
  "name": "svm1",
},
"uuid": "acde901a-a379-4a91-9ea6-1b728ed6696f",
"name": "subsystem1",
"os_type": "linux",
"target_nqn": "nqn.1992-
08.com.netapp:sn.d04594ef915b4c73b642169e72e4c0b1:subsystem.subsystem1",
"serial_number": "wtJNKNKD-uPLAAAAAAAD",
"io_queue": {
  "default": {
    "count": 4,
    "depth": 32
  }
}
}
```

Retrieving the NVMe namespaces mapped to a specific NVMe subsystem

Note that the `fields` query parameter is used to specify the desired properties.

```
# The API:
GET /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f?fields=subsystem_maps' -H 'Accept:
application/json'

# The response:
{
"svm": {
  "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
  "name": "svm1",
},
"uuid": "acde901a-a379-4a91-9ea6-1b728ed6696f",
"name": "subsystem1",
"subsystem_maps": [
  {
    "anagrpid": "00000001h",
    "namespace": {
      "uuid": "eeaaca23-128d-4a7d-be4a-dc9106705799",
      "name": "/vol/vol1/namespace1"
    },
    "nsid": "00000001h"
  },
  {
    "anagrpid": "00000002h",
    "namespace": {
      "uuid": "feaaca23-83a0-4a7d-beda-dc9106705799",
      "name": "/vol/vol1/namespace2"
    },
    "nsid": "00000002h"
  }
]
}
```

Adding a comment about an NVMe subsystem

```
# The API:
PATCH /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f' -H 'Accept: application/json' -d '{
"comment": "A brief comment about the subsystem" }'
```

Deleting an NVMe subsystem

```
# The API:
DELETE /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f' -H 'Accept: application/json'
```

Deleting an NVMe subsystem with mapped NVMe namespaces

Normally, deleting an NVMe subsystem that has mapped NVMe namespaces is not allowed. The deletion can be forced using the `allow_delete_while_mapped` query parameter.

```
# The API:
DELETE /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f?allow_delete_while_mapped=true' -H 'Accept:
application/json'
```

Delete an NVMe subsystem with NVMe subsystem hosts

Normally, deleting an NVMe subsystem with NVMe subsystem hosts is disallowed. The deletion can be forced using the `allow_delete_with_hosts` query parameter.

```
# The API:
DELETE /api/protocols/nvme/subsystems/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f?allow_delete_with_hosts=true' -H 'Accept:
application/json'
```

An NVMe Subsystem Host

An NVMe subsystem host is a network host provisioned to an NVMe subsystem to access namespaces mapped to that subsystem.

Examples

Adding an NVMe subsystem host to an NVMe subsystem

```
# The API:
POST /protocols/nvme/subsystems/{subsystem.uuid}/hosts

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f/hosts' -H 'Accept: application/json' -d '{
"nqn": "nqn.1992-01.com.example:subsys1.host1" }'
```

Adding multiple NVMe subsystem hosts to an NVMe subsystem

```
# The API:
POST /protocols/nvme/subsystems/{subsystem.uuid}/hosts

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f/hosts' -H 'Accept: application/json' -d '{
"records": [ { "nqn": "nqn.1992-01.com.example:subsys1.host2" }, { "nqn":
"nqn.1992-01.com.example:subsys1.host3" } ] }'
```

Retrieving all NVMe subsystem hosts for an NVMe subsystem

```
# The API:
GET /protocols/nvme/subsystems/{subsystem.uuid}/hosts

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f/hosts' -H 'Accept: application/json'

# The response:
{
"records": [
  {
    "nqn": "nqn.1992-01.com.example:subsys1.host1",
  },
  {
    "nqn": "nqn.1992-01.com.example:subsys1.host2",
  },
  {
    "nqn": "nqn.1992-01.com.example:subsys1.host3",
  }
],
"num_records": 3,
}
```

Retrieving a specific NVMe subsystem host for an NVMe subsystem

```
# The API:
GET /protocols/nvme/subsystems/{subsystem.uuid}/hosts/{nqn}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f/hosts/nqn.1992-01.com.example:subsys1.host1'
-H 'Accept: application/json'

# The response:
{
"subsystem": {
  "uuid": "acde901a-a379-4a91-9ea6-1b728ed6696f",
},
"nqn": "nqn.1992-01.com.example:subsys1.host1",
"dh_hmac_chap": {
  "node": "none"
},
"priority": "regular",
}
```

Deleting an NVMe subsystem host from an NVMe subsystem

```
# The API:
DELETE /protocols/nvme/subsystems/{subsystem.uuid}/hosts/{nqn}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/nvme/subsystems/acde901a-
a379-4a91-9ea6-1b728ed6696f/hosts/nqn.1992-01.com.example:subsys1.host1'
-H 'Accept: application/json'
```

Retrieve NVMe subsystems

GET `/protocols/nvme/subsystems`

Introduced In: 9.6

Retrieves NVMe subsystems.

Related ONTAP commands

- `vserver nvme subsystem host show`
- `vserver nvme subsystem map show`
- `vserver nvme subsystem show`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
replication.error.subsystem.local_svm	boolean	query	False	Filter by replication.error.subsystem.local_svm • Introduced in: 9.17
replication.error.subsystem.uuid	string	query	False	Filter by replication.error.subsystem.uuid • Introduced in: 9.17
replication.error.subsystem.name	string	query	False	Filter by replication.error.subsystem.name • Introduced in: 9.17 • maxLength: 64 • minLength: 1
replication.error.summary.code	string	query	False	Filter by replication.error.summary.code • Introduced in: 9.17
replication.error.summary.message	string	query	False	Filter by replication.error.summary.message • Introduced in: 9.17

Name	Type	In	Required	Description
replication.error.summary.arguments.code	string	query	False	Filter by replication.error.summary.arguments.code • Introduced in: 9.17
replication.error.summary.arguments.message	string	query	False	Filter by replication.error.summary.arguments.message • Introduced in: 9.17
replication.peer_svm.uuid	string	query	False	Filter by replication.peer_svm.uuid • Introduced in: 9.17
replication.peer_svm.name	string	query	False	Filter by replication.peer_svm.name • Introduced in: 9.17
replication.state	string	query	False	Filter by replication.state • Introduced in: 9.17
replication.peer_subsystem.uuid	string	query	False	Filter by replication.peer_subsystem.uuid • Introduced in: 9.17
serial_number	string	query	False	Filter by serial_number • maxLength: 20 • minLength: 20

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
os_type	string	query	False	Filter by os_type
hosts.dh_hmac_chap.group_size	string	query	False	Filter by hosts.dh_hmac_chap.group_size • Introduced in: 9.12
hosts.dh_hmac_chap.hash_function	string	query	False	Filter by hosts.dh_hmac_chap.hash_function • Introduced in: 9.12
hosts.dh_hmac_chap.mode	string	query	False	Filter by hosts.dh_hmac_chap.mode • Introduced in: 9.12
hosts.tls.key_type	string	query	False	Filter by hosts.tls.key_type • Introduced in: 9.16
hosts.nqn	string	query	False	Filter by hosts.nqn
hosts.proximity.local_svm	boolean	query	False	Filter by hosts.proximity.local_svm • Introduced in: 9.17
hosts.proximity.peer_svms.uuid	string	query	False	Filter by hosts.proximity.peer_svms.uuid • Introduced in: 9.17

Name	Type	In	Required	Description
hosts.proximity.peer_svms.name	string	query	False	Filter by hosts.proximity.peer_svms.name • Introduced in: 9.17
hosts.priority	string	query	False	Filter by hosts.priority • Introduced in: 9.14
delete_on_unmap	boolean	query	False	Filter by delete_on_unmap • Introduced in: 9.7
subsystem_maps.namespace.name	string	query	False	Filter by subsystem_maps.namespace.name
subsystem_maps.namespace.uuid	string	query	False	Filter by subsystem_maps.namespace.uuid
subsystem_maps.nsid	string	query	False	Filter by subsystem_maps.nsid
subsystem_maps.anagrpid	string	query	False	Filter by subsystem_maps.anagrpid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
comment	string	query	False	Filter by comment • maxLength: 255 • minLength: 0

Name	Type	In	Required	Description
io_queue.default.depth	integer	query	False	Filter by io_queue.default.depth • Max value: 128 • Min value: 16
io_queue.default.count	integer	query	False	Filter by io_queue.default.count • Max value: 15 • Min value: 1
name	string	query	False	Filter by name • maxLength: 64 • minLength: 1
target_nqn	string	query	False	Filter by target_nqn • maxLength: 223 • minLength: 1
vendor_uuids	string	query	False	Filter by vendor_uuids • Introduced in: 9.9
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_subsystem]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "hosts": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "dh_hmac_chap": {
            "group_size": "string",
            "hash_function": "string",
            "mode": "bidirectional"
          },
          "nqn": "nqn.1992-01.example.com:string",
          "priority": "string",
          "proximity": {
            "peer_svms": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "peer1",
                "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
              }
            ]
```

```
          },
          "tls": {
            "key_type": "configured"
          }
        }
      ],
      "io_queue": {
        "default": {
          "count": 4,
          "depth": 16
        }
      },
      "name": "subsystem1",
      "os_type": "string",
      "replication": {
        "error": {
          "subsystem": {
            "name": "subsystem1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "summary": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          }
        },
        "peer_subsystem": {
          "uuid": "1cd8a443-86d2-11e0-ae1c-123478563412"
        },
        "peer_svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "state": "string"
      },
      "serial_number": "wCVsgFMiuMhVAAAAAAAB",
```

```
      "subsystem_maps": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "anagrpid": "00103050h",
          "namespace": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "/vol/vol1/namespace1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "nsid": "00000001h"
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target_nqn": "nqn.1992-01.example.com:string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vendor_uuids": [
        "1447f0f4-42e5-0dfc-871a-dc9b3f92d8f8"
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

Name	Type	Description
_links	_links	

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies user configured values of I/O queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

default

The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

Name	Type	Description
count	integer	The number of host I/O queue pairs.
depth	integer	The host I/O queue depth.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
default	default	The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
local_svm	boolean	Indicates whether the reported subsystem is on the local SVM or the peer SVM. When deleting a replicated subsystem, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer subsystem remains, the peer subsystem is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.
summary	summary	A user friendly message describing the error.

peer_subsystem

Name	Type	Description
uuid	string	The unique identifier of the peer subsystem.

peer_svm

The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.

Name	Type	Description
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to subsystem replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_subsystem	peer_subsystem	

Name	Type	Description
peer_svm	peer_svm	The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.
state	string	The state of the replication queue associated with this subsystem. If this subsystem is not in the replication queue, the state is reported as *ok*. If this subsystem is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this subsystem is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

namespace

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

subsystem_maps

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
_links	_links	

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPIP is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
namespace	namespace	An NVMe namespace mapped to the NVMe subsystem.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
_links	_links	
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.

Name	Type	Description
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.
vendor_uuids	array[string]	Vendor-specific identifiers (UUIDs) optionally assigned to an NVMe subsystem when the subsystem is created. The identifiers are used to enable vendor-specific NVMe protocol features. The identifiers are provided by a host application vendor and shared with NetApp prior to a joint product release. Creating an NVMe subsystem with an unknown or non-specific identifier will have no effect on the NVMe subsystem. Refer to the ONTAP SAN Administration Guide for a list of the supported vendor-specific identifiers. After a subsystem is created, the vendor-specific identifiers cannot be changed or removed. Optional in POST. • Introduced in: 9.9 • readCreate: 1

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NVMe subsystem

POST `/protocols/nvme/subsystems`

Introduced In: 9.6

Creates an NVMe subsystem.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the NVMe subsystem.
- `name` - Name for NVMe subsystem. Once created, an NVMe subsystem cannot be renamed.
- `os_type` - Operating system of the NVMe subsystem's hosts.

Related ONTAP commands

- `vserver nvme subsystem create`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.

Name	Type	Description
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
svm	svm	SVM, applies only to SVM-scoped objects.
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.

Name	Type	Description
vendor_uuids	array[string]	Vendor-specific identifiers (UUIDs) optionally assigned to an NVMe subsystem when the subsystem is created. The identifiers are used to enable vendor-specific NVMe protocol features. The identifiers are provided by a host application vendor and shared with NetApp prior to a joint product release. Creating an NVMe subsystem with an unknown or non-specific identifier will have no effect on the NVMe subsystem. Refer to the ONTAP SAN Administration Guide for a list of the supported vendor-specific identifiers. After a subsystem is created, the vendor-specific identifiers cannot be changed or removed. Optional in POST. • Introduced in: 9.9 • readCreate: 1

Example request


```
{
  "comment": "string",
  "hosts": [
    {
      "dh_hmac_chap": {
        "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "group_size": "string",
        "hash_function": "string",
        "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "mode": "bidirectional"
      },
      "nqn": "nqn.1992-01.example.com:string",
      "priority": "string",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      },
      "tls": {
        "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
        "key_type": "configured"
      }
    }
  ],
  "io_queue": {
    "default": {
      "count": 4,
      "depth": 16
    }
  },
  "name": "subsystem1",
  "os_type": "string",
  "replication": {
    "error": {
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
```

```
      },
      "peer_subsystem": {
        "uuid": "1cd8a443-86d2-11e0-ae1c-123478563412"
      },
      "peer_svm": {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      },
      "state": "string"
    },
    "serial_number": "wCVsgFMiuMhVAAAAAAAB",
    "subsystem_maps": [
      {
        "anagrpid": "00103050h",
        "namespace": {
          "name": "/vol/vol1/namespace1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "nsid": "00000001h"
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "target_nqn": "nqn.1992-01.example.com:string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
    "vendor_uuids": [
      "1447f0f4-42e5-0dfc-871a-dc9b3f92d8f8"
    ]
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[nvme_subsystem]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "comment": "string",
      "hosts": [
        {
          "dh_hmac_chap": {
            "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "group_size": "string",
            "hash_function": "string",
            "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "mode": "bidirectional"
          },
          "nqn": "nqn.1992-01.example.com:string",
          "priority": "string",
          "proximity": {
            "peer_svms": [
              {
                "name": "peer1",
                "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
              }
            ]
          },
          "tls": {
            "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
            "key_type": "configured"
          }
        }
      ],
      "io_queue": {
        "default": {
          "count": 4,
          "depth": 16
        }
      },
      "name": "subsystem1",
      "os_type": "string",
      "replication": {
        "error": {
          "subsystem": {
```

```
            "name": "subsystem1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "peer_subsystem": {
          "uuid": "1cd8a443-86d2-11e0-ae1c-123478563412"
        },
        "peer_svm": {
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "state": "string"
      },
      "serial_number": "wCVsgFMiuMhVAAAAAAAB",
      "subsystem_maps": [
        {
          "anagrpid": "00103050h",
          "namespace": {
            "name": "/vol/vol1/namespace1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "nsid": "00000001h"
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target_nqn": "nqn.1992-01.example.com:string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vendor_uuids": [
        "1447f0f4-42e5-0dfc-871a-dc9b3f92d8f8"
      ]
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The supplied SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	The svm.uuid or svm.name must be provided.
72089635	Setting vendor-specific UUIDs on NVMe subsystems is not supported until the effective cluster version is 9.9 or later.
72089636	Creating NVMe subsystems with `os_type` AIX is not supported until the effective cluster version is 9.13.1 or later.
72089709	The NVMe subsystem name contains an invalid character.
72089711	An invalid vendor-specific UUID was specified.
72089712	A duplicate vendor-specific UUID was specific.
72089713	Too many vendor UUIDs were supplied.
72089716	The DH-HMAC-CHAP secret property is invalid. DH-HMAC-CHAP secrets must be in the format "DHHC-1:0X:<Base 64 encoded key and CRC>:", where X represents 0, 1, or 3 indicating no hash function, SHA-256, and SHA-512 respectively.
72089771	The NQN is invalid. A non-empty qualifier is required after the prefix. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089772	The NQN is invalid. Add the prefix *'nqn'*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089773	The NQN is invalid. The date field must be formatted *yyyy-mm*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72090003	A host to be added to an NVMe subsystem is missing the "nqn" property.
72090025	The NVMe subsystem already exists for the SVM.
72090029	The NVMe service does not exist.
72090030	A partial success occurred while adding multiple NVMe subsystem hosts to an NVMe subsystem.

Error Code	Description
72090036	An NVMe subsystem host NQN was duplicated in the input.
72090042	The DH-HMAC-CHAP secret property is required when setting any other NVMe in-band authentication properties for a host.
72090043	An igroup already exists with the requested NVMe subsystem name.
72090151	NVMe/TCP-TLS is not supported for the effective version of the cluster.
72090202	A provided NVMe subsystem host TLS configured PSK is not valid.
72090204	A TLS configured PSK was not provided when adding an NVMe subsystem host with the configured key type.
72090205	An invalid combination for the TLS key type and configured PSK values was provided when adding an NVMe subsystem host. When key type is "none", no configured PSK is allowed. When key type is "configured", a configured PSK is required.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
controller_secret_key	string	The controller secret for NVMe in-band authentication. The value of this property is used by the NVMe host to authenticate the NVMe controller while establishing a connection. If unset, the controller is not authenticated. When supplied, the property `host_secret_key` must also be supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a controller secret has been set for the host, but the controller secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
host_secret_key	string	The host secret for NVMe in-band authentication. The value of this property is used by the NVMe controller to authenticate the NVMe host while establishing a connection. If unset, no authentication is performed by the host or controller. This property must be supplied if any other NVMe in-band authentication properties are supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a host secret has been set for the host, but the host secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.

Name	Type	Description
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
configured_psk	string	A user supplied pre-shared key (PSK) value in PSK Interchange Format. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. This property is only allowed when `key_type` is `configured`. If `configured_psk` is supplied and `key_type` is unset, `key_type` defaults to `configured`. This property is write-only. The `key_type` property can be used to identify if a configured PSK has been set for the host, but the PSK value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies user configured values of I/O queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

default

The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

Name	Type	Description
count	integer	The number of host I/O queue pairs.
depth	integer	The host I/O queue depth.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
default	default	The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
local_svm	boolean	Indicates whether the reported subsystem is on the local SVM or the peer SVM. When deleting a replicated subsystem, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer subsystem remains, the peer subsystem is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to

this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

peer_subsystem

Name	Type	Description
uuid	string	The unique identifier of the peer subsystem.

peer_svm

The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to subsystem replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_subsystem	peer_subsystem	
peer_svm	peer_svm	The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
state	string	The state of the replication queue associated with this subsystem. If this subsystem is not in the replication queue, the state is reported as *ok*. If this subsystem is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this subsystem is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

namespace

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
name	string	The name of the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

subsystem_maps

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPIP is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
namespace	namespace	An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.

Name	Type	Description
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
svm	svm	SVM, applies only to SVM-scoped objects.
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.

Name	Type	Description
vendor_uuids	array[string]	Vendor-specific identifiers (UUIDs) optionally assigned to an NVMe subsystem when the subsystem is created. The identifiers are used to enable vendor-specific NVMe protocol features. The identifiers are provided by a host application vendor and shared with NetApp prior to a joint product release. Creating an NVMe subsystem with an unknown or non-specific identifier will have no effect on the NVMe subsystem. Refer to the ONTAP SAN Administration Guide for a list of the supported vendor-specific identifiers. After a subsystem is created, the vendor-specific identifiers cannot be changed or removed. Optional in POST. • Introduced in: 9.9 • readCreate: 1

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve NVMe subsystem hosts

GET `/protocols/nvme/subsystems/{subsystem.uuid}/hosts`

Introduced In: 9.6

Retrieves the NVMe subsystem hosts of an NVMe subsystem.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `subsystem_maps.*`

Related ONTAP commands

- `vserver nvme subsystem map show`
- `vserver nvme subsystem show`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_host]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "dh_hmac_chap": {
        "group_size": "string",
        "hash_function": "string",
        "mode": "bidirectional"
      },
      "io_queue": {
        "count": 4,
        "depth": 32
      },
      "nqn": "nqn.1992-01.example.com:string",
      "priority": "string",
      "proximity": {
        "peer_svms": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      },
      "subsystem": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "tls": {
        "key_type": "configured"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The NVMe subsystem does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue count is being used. Valid in GET only.
depth	integer	The I/O queue depth. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue depth is being used. Valid in GET only.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. The default value is inherited from the owning NVMe subsystem.
depth	integer	The I/O queue depth. The default value is inherited from the owning NVMe subsystem.

subsystem

The NVMe subsystem to which the NVMe host has been provisioned.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

records

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
_links	_links	
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target. Not allowed in POST when the `records` property is used.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

nvme_subsystem_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
_links	_links	
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Add NVMe subsystem hosts

POST `/protocols/nvme/subsystems/{subsystem.uuid}/hosts`

Introduced In: 9.6

Adds NVMe subsystem host(s) to an NVMe subsystem.

Required properties

- `nqn` or `records.nqn` - NVMe host(s) NQN(s) to add to the NVMe subsystem.

Related ONTAP commands

- `vserver nvme subsystem host add`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
records	array[records]	An array of NVMe hosts specified to add multiple NVMe hosts to an NVMe subsystem in a single API call. Valid in POST only.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

Example request

```
{
  "dh_hmac_chap": {
    "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
    "group_size": "string",
    "hash_function": "string",
    "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
    "mode": "bidirectional"
  },
  "io_queue": {
    "count": 4,
    "depth": 32
  },
  "nqn": "nqn.1992-01.example.com:string",
  "priority": "string",
  "proximity": {
    "peer_svms": [
      {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
  },
  "records": [
    {
      "dh_hmac_chap": {
        "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "group_size": "string",
        "hash_function": "string",
        "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "mode": "bidirectional"
      },
      "io_queue": {
        "count": 4,
        "depth": 32
      },
      "nqn": "nqn.1992-01.example.com:string",
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
```

```
      "tls": {
        "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
        "key_type": "configured"
      }
    }
  ],
  "subsystem": {
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "tls": {
    "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
    "key_type": "configured"
  }
}
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[nvme_subsystem_host]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "dh_hmac_chap": {
        "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "group_size": "string",
        "hash_function": "string",
        "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
        "mode": "bidirectional"
      },
      "io_queue": {
        "count": 4,
        "depth": 32
      },
      "nqn": "nqn.1992-01.example.com:string",
      "priority": "string",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      },
      "records": [
        {
          "dh_hmac_chap": {
            "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "group_size": "string",
            "hash_function": "string",
            "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "mode": "bidirectional"
          },
          "io_queue": {
            "count": 4,
            "depth": 32
          },
          "nqn": "nqn.1992-01.example.com:string",
          "subsystem": {
```

```
            "name": "subsystem1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "tls": {
            "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
            "key_type": "configured"
          }
        }
      ],
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "tls": {
        "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
        "key_type": "configured"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262186	The "records" array and other host properties are mutually exclusive.
72089705	The NVMe subsystem host already exists for the NVMe subsystem.

Error Code	Description
72089716	The DH-HMAC-CHAP secret property is invalid. DH-HMAC-CHAP secrets must be in the format "DHHC-1:0X:<Base 64 encoded key and CRC>:", where X represents 0, 1, or 3 indicating no hash function, SHA-256, and SHA-512 respectively.
72089771	The NQN is invalid. A non-empty qualifier is required after the prefix. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089772	The NQN is invalid. Add the prefix *'nqn'*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089773	The NQN is invalid. The date field must be formatted *yyyy-mm*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72090001	The NVMe subsystem does not exist.
72090003	A host to be added to an NVMe subsystem is missing the "nqn" property.
72090036	An NVMe subsystem host NQN is duplicated in the input.
72090041	An element in the "records" array contains an invalid property.
72090042	The DH-HMAC-CHAP secret property is required when setting any other NVMe in-band authentication properties for a host.
72090151	NVMe/TCP-TLS is not supported for the effective version of the cluster.
72090202	A provided NVMe subsystem host TLS configured PSK is not valid.
72090204	A TLS configured PSK was not provided when adding an NVMe subsystem host with the configured key type.
72090205	An invalid combination for the TLS key type and configured PSK values was provided when adding an NVMe subsystem host. When key type is "none", no configured PSK is allowed. When key type is "configured", a configured PSK is required.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
controller_secret_key	string	The controller secret for NVMe in-band authentication. The value of this property is used by the NVMe host to authenticate the NVMe controller while establishing a connection. If unset, the controller is not authenticated. When supplied, the property `host_secret_key` must also be supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a controller secret has been set for the host, but the controller secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
host_secret_key	string	The host secret for NVMe in-band authentication. The value of this property is used by the NVMe controller to authenticate the NVMe host while establishing a connection. If unset, no authentication is performed by the host or controller. This property must be supplied if any other NVMe in-band authentication properties are supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a host secret has been set for the host, but the host secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue count is being used. Valid in GET only.
depth	integer	The I/O queue depth. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue depth is being used. Valid in GET only.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. The default value is inherited from the owning NVMe subsystem.
depth	integer	The I/O queue depth. The default value is inherited from the owning NVMe subsystem.

subsystem

The NVMe subsystem to which the NVMe host has been provisioned.

Name	Type	Description
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
configured_psk	string	A user supplied pre-shared key (PSK) value in PSK Interchange Format. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. This property is only allowed when `key_type` is `configured`. If `configured_psk` is supplied and `key_type` is unset, `key_type` defaults to `configured`. This property is write-only. The `key_type` property can be used to identify if a configured PSK has been set for the host, but the PSK value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

records

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target. Not allowed in POST when the `records` property is used.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

nvme_subsystem_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.

Name	Type	Description
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
records	array[records]	An array of NVMe hosts specified to add multiple NVMe hosts to an NVMe subsystem in a single API call. Valid in POST only.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete an NVMe subsystem host

DELETE `/protocols/nvme/subsystems/{subsystem.uuid}/hosts/{nqn}`

Introduced In: 9.6

Deletes an NVMe subsystem host from an NVMe subsystem.

Related ONTAP commands

- `vserver nvme subsystem host remove`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
nqn	string	path	True	The NVMe qualified name (NQN) used to identify the NVMe subsystem host.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72089771	The NQN is invalid. A non-empty qualifier is required after the prefix. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089772	The NQN is invalid. Add the prefix *'nqn'*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72089773	The NQN is invalid. The date field must be formatted *yyyy-mm*. An example of a valid NQN is *nqn.1992-01.com.example:string*.
72090001	The NVMe subsystem does not exist.
72090004	The NVMe subsystem host does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe subsystem host

GET `/protocols/nvme/subsystems/{subsystem.uuid}/hosts/{nqn}`

Introduced In: 9.6

Retrieves an NVMe subsystem host of an NVMe subsystem.

Related ONTAP commands

- `vserver nvme subsystem host show`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.

Name	Type	In	Required	Description
nqn	string	path	True	The NVMe qualified name (NQN) used to identify the NVMe subsystem host.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.

Name	Type	Description
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dh_hmac_chap": {
    "group_size": "string",
    "hash_function": "string",
    "mode": "bidirectional"
  },
  "io_queue": {
    "count": 4,
    "depth": 32
  },
  "nqn": "nqn.1992-01.example.com:string",
  "priority": "string",
  "proximity": {
    "peer_svms": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
  },
  "subsystem": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "tls": {
    "key_type": "configured"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The NVMe subsystem does not exist.
72090004	The NVMe subsystem host does not exist.
72090022	The NVMe subsystem host does not exist in the specified subsystem.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue count is being used. Valid in GET only.
depth	integer	The I/O queue depth. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue depth is being used. Valid in GET only.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. The default value is inherited from the owning NVMe subsystem.
depth	integer	The I/O queue depth. The default value is inherited from the owning NVMe subsystem.

subsystem

The NVMe subsystem to which the NVMe host has been provisioned.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

records

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
_links	_links	
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target. Not allowed in POST when the `records` property is used.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an NVMe subsystem host

PATCH `/protocols/nvme/subsystems/{subsystem.uuid}/hosts/{nqn}`

Introduced In: 9.17

Updates an NVMe subsystem host.

Related ONTAP commands

- `vserver nvme subsystem host add-proximal-vserver`
- `vserver nvme subsystem host remove-proximal-vserver`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
subsystem.uuid	string	path	True	The unique identifier of the NVMe subsystem.
nqn	string	path	True	The NVMe qualified name (NQN) used to identify the NVMe subsystem host.

Request Body

Name	Type	Description
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.

Example request

```
{
  "io_queue": {
    "count": 4,
    "depth": 32
  },
  "proximity": {
    "peer_svms": [
      {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
  },
  "subsystem": {
    "name": "subsystem1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5376354	The SVM peer relationship does not exist.
26345675	The SVM peer relationship contains local SVM name mismatch.
72090001	The NVMe subsystem does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue count is being used. Valid in GET only.

Name	Type	Description
depth	integer	The I/O queue depth. Absence of this property in GET implies property priority is set and platform and transport protocol specific values for I/O queue depth is being used. Valid in GET only.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
count	integer	The number of I/O queue pairs. The default value is inherited from the owning NVMe subsystem.
depth	integer	The I/O queue depth. The default value is inherited from the owning NVMe subsystem.

subsystem

The NVMe subsystem to which the NVMe host has been provisioned.

Name	Type	Description
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

records

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.

nvme_subsystem_host

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
subsystem	subsystem	The NVMe subsystem to which the NVMe host has been provisioned.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Remove an NVMe subsystem

DELETE `/protocols/nvme/subsystems/{uuid}`

Introduced In: 9.6

Removes an NVMe subsystem.

Related ONTAP commands

- `vserver nvme subsystem delete`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe subsystem.
allow_delete_while_mapped	boolean	query	False	Allows for the deletion of a mapped NVMe subsystem.
allow_delete_with_hosts	boolean	query	False	Allows for the deletion of an NVMe subsystem with NVMe hosts.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The NVMe subsystem does not exist.

Error Code	Description
72090023	The NVMe subsystem contains one or more mapped namespaces. Use the `allow_delete_while_mapped` query parameter to delete an NVMe subsystem with mapped NVMe namespaces.
72090024	The NVMe subsystem contains one or more NVMe hosts. Use the `allow_delete_with_hosts` query parameter to delete an NVMe subsystem with NVMe hosts.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe subsystem

GET `/protocols/nvme/subsystems/{uuid}`

Introduced In: 9.6

Retrieves an NVMe subsystem.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `subsystem_maps.*`

Related ONTAP commands

- `vserver nvme subsystem host show`
- `vserver nvme subsystem map show`
- `vserver nvme subsystem show`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe subsystem.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Required in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Required in POST.

Name	Type	Description
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
svm	svm	SVM, applies only to SVM-scoped objects.
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.

Name	Type	Description
vendor_uuids	array[string]	Vendor-specific identifiers (UUIDs) optionally assigned to an NVMe subsystem when the subsystem is created. The identifiers are used to enable vendor-specific NVMe protocol features. The identifiers are provided by a host application vendor and shared with NetApp prior to a joint product release. Creating an NVMe subsystem with an unknown or non-specific identifier will have no effect on the NVMe subsystem. Refer to the ONTAP SAN Administration Guide for a list of the supported vendor-specific identifiers. After a subsystem is created, the vendor-specific identifiers cannot be changed or removed. Optional in POST. • Introduced in: 9.9 • readCreate: 1

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "hosts": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "dh_hmac_chap": {
        "group_size": "string",
        "hash_function": "string",
        "mode": "bidirectional"
      },
      "nqn": "nqn.1992-01.example.com:string",
      "priority": "string",
      "proximity": {
        "peer_svms": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      },
      "tls": {
        "key_type": "configured"
      }
    }
  ],
  "io_queue": {
    "default": {
      "count": 4,
      "depth": 16
    }
```

```
  },
  "name": "subsystem1",
  "os_type": "string",
  "replication": {
    "error": {
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "summary": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    },
    "peer_subsystem": {
      "uuid": "1cd8a443-86d2-11e0-ae1c-123478563412"
    },
    "peer_svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "peer1",
      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
    },
    "state": "string"
  },
  "serial_number": "wCVsgFMiuMhVAAAAAAAB",
  "subsystem_maps": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "anagrpid": "00103050h",
      "namespace": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/vol1/namespace1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "nsid": "00000001h"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target_nqn": "nqn.1992-01.example.com:string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vendor_uuids": [
    "1447f0f4-42e5-0dfc-871a-dc9b3f92d8f8"
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The NVMe subsystem does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

Name	Type	Description
_links	_links	

Name	Type	Description
dh_hmac_chap	dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies user configured values of I/O queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

default

The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

Name	Type	Description
count	integer	The number of host I/O queue pairs.
depth	integer	The host I/O queue depth.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
default	default	The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
local_svm	boolean	Indicates whether the reported subsystem is on the local SVM or the peer SVM. When deleting a replicated subsystem, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer subsystem remains, the peer subsystem is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.
summary	summary	A user friendly message describing the error.

peer_subsystem

Name	Type	Description
uuid	string	The unique identifier of the peer subsystem.

peer_svm

The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.

Name	Type	Description
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to subsystem replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_subsystem	peer_subsystem	

Name	Type	Description
peer_svm	peer_svm	The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.
state	string	The state of the replication queue associated with this subsystem. If this subsystem is not in the replication queue, the state is reported as *ok*. If this subsystem is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this subsystem is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

namespace

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
_links	_links	
name	string	The name of the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

subsystem_maps

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
_links	_links	

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPIP is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
namespace	namespace	An NVMe namespace mapped to the NVMe subsystem.
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Update an NVMe subsystem

PATCH `/protocols/nvme/subsystems/{uuid}`

Introduced In: 9.6

Updates an NVMe subsystem.

Related ONTAP commands

- `vserver nvme subsystem modify`

Learn more

- DOC /protocols/nvme/subsystems

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe subsystem.

Request Body

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.

Example request


```
{
  "comment": "string",
  "io_queue": {
    "default": {
      "count": 4,
      "depth": 16
    }
  },
  "replication": {
    "error": {
      "subsystem": {
        "name": "subsystem1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "peer_subsystem": {
      "uuid": "1cd8a443-86d2-11e0-ae1c-123478563412"
    },
    "peer_svm": {
      "name": "peer1",
      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
    },
    "state": "string"
  },
  "serial_number": "wCVsgFMiuMhVAAAAAAAB",
  "subsystem_maps": [
    {
      "anagrpid": "00103050h",
      "namespace": {
        "name": "/vol/vol1/namespace1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "nsid": "00000001h"
    }
  ],
  "target_nqn": "nqn.1992-01.example.com:string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090001	The NVMe subsystem does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.

Name	Type	Description
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

hosts

default

The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

Name	Type	Description
count	integer	The number of host I/O queue pairs.
depth	integer	The host I/O queue depth.

io_queue

The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
default	default	The default I/O queue parameters inherited by NVMe hosts in the NVMe subsystem.

subsystem

An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
local_svm	boolean	Indicates whether the reported subsystem is on the local SVM or the peer SVM. When deleting a replicated subsystem, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer subsystem remains, the peer subsystem is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the NVMe subsystem.
uuid	string	The unique identifier of the NVMe subsystem.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to

this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
subsystem	subsystem	An NVMe subsystem maintains configuration state and NVMe namespace access control for a set of NVMe-connected hosts.

peer_subsystem

Name	Type	Description
uuid	string	The unique identifier of the peer subsystem.

peer_svm

The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to subsystem replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this subsystem. Subsystems within a peering relationship are replicated in the same stream, so the error reported here might be related to this subsystem or a prior replicated subsystem that is now blocking the replication of this subsystem. Both the error information and the subsystem encountering the error are reported. If the error is configuration related, it can be corrected on the referenced subsystem. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_subsystem	peer_subsystem	
peer_svm	peer_svm	The peered SVM to which the subsystem is replicated. Subsystem are are automatically replicated when mapped to a namespace in a SnapMirror active sync relationship. When a subsystem is mapped to a namespace in an active sync relationship, the subsystem is restricted to only be mapped to namespaces that are members of the same consistency group.

Name	Type	Description
state	string	The state of the replication queue associated with this subsystem. If this subsystem is not in the replication queue, the state is reported as *ok*. If this subsystem is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this subsystem is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

namespace

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
name	string	The name of the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

subsystem_maps

An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPIP is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
namespace	namespace	An NVMe namespace mapped to the NVMe subsystem.

Name	Type	Description
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_subsystem

An NVMe subsystem maintains configuration state and namespace access control for a set of NVMe-connected hosts.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST and PATCH.
delete_on_unmap	boolean	An option that causes the subsystem to be deleted when the last subsystem map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the subsystem is created.
io_queue	io_queue	The properties of the submission queue used to submit I/O commands for execution by the NVMe controller.

Name	Type	Description
replication	replication	Properties related to subsystem replication.
serial_number	string	The serial number of the NVMe subsystem.
subsystem_maps	array[subsystem_maps]	The NVMe namespaces mapped to the NVMe subsystem. There is an added computational cost to retrieving property values for `subsystem_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
target_nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.
uuid	string	The unique identifier of the NVMe subsystem.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NVMe namespaces

Storage namespaces endpoint overview

Overview

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

The NVMe namespace REST API allows you to create, update, delete and discover NVMe namespaces.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

Performance monitoring

Performance of an NVMe namespace can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the space utilization and performance of an NVMe namespace in terms of IOPS, latency, and throughput. The `metric.*` properties denote an average, whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Creating an NVMe namespace

This example creates a 300 gigabyte NVMe namespace, with 4096-byte blocks, in SVM *svm1*, volume *vol1*, configured for use by *linux* hosts. The `return_records` query parameter is used to retrieve properties of the newly created NVMe namespace in the POST response.

```
# The API:
POST /api/storage/namespaces

# The call:
curl -X POST 'https://<mgmt-
ip>/api/storage/namespaces?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "os_type": "linux",
"space": { "block_size": "4096", "size": "300G" }, "name" :
"/vol/vol1/namespace1" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "dccdc3e6-cf4e-498f-bec6-f7897f945669",
    "svm": {
```

```
      "uuid": "6bf967fd-2a1c-11e9-b682-005056bbc17d",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6bf967fd-2a1c-11e9-b682-005056bbc17d"
        }
      }
    },
    "name": "/vol/vol1/namespace1",
    "location": {
      "namespace": "namespace1",
      "volume": {
        "uuid": "71cd0dba-2a1c-11e9-b682-005056bbc17d",
        "name": "vol1",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/71cd0dba-2a1c-11e9-b682-
005056bbc17d"
          }
        }
      }
    },
    "enabled": true,
    "os_type": "linux",
    "space": {
      "block_size": 4096,
      "size": 322122547200,
      "used": 0,
      "guarantee": {
        "requested": false,
        "reserved": false
      }
    },
    "status": {
      "container_state": "online",
      "read_only": false,
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/namespaces/dccdc3e6-cf4e-498f-bec6-
f7897f945669"
      }
    }
  }
]
```

```
}
```

Updating an NVMe namespace comment

This example sets the `comment` property of an NVMe namespace.

```
# The API:
PATCH /api/storage/namespaces/{uuid}

# The call:
```

Updating the size of an NVMe namespace

This example increases the size of an NVMe namespace.

```
# The API:
PATCH /api/storage/namespaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/namespaces/dccdc3e6-cf4e-
498f-bec6-f7897f945669' -H 'Accept: application/hal+json' -d '{ "space": {
"size": "1073741824" } }'
```

Retrieving NVMe namespaces

This example retrieves summary information for all online NVMe namespaces in SVM *svm1*. The `svm.name` and `status.state` query parameters are to find the desired NVMe namespaces.

```
# The API:
GET /api/storage/namespaces

# The call:
curl -X GET 'https://<mgmt-
ip>/api/storage/namespaces?svm.name=svm1&status.state=online' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "uuid": "5c254d22-96a6-42ac-aad8-0cd9ebd126b6",
```

```
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol1/namespace2",
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/namespaces/5c254d22-96a6-42ac-aad8-
0cd9ebd126b6"
      }
    }
  },
  {
    "uuid": "dccdc3e6-cf4e-498f-bec6-f7897f945669",
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol1/namespace1",
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/namespaces/dccdc3e6-cf4e-498f-bec6-
f7897f945669"
      }
    }
  },
  {
    "uuid": "be732687-20cf-47d2-a0e2-2a989d15661d",
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol2/namespace3",
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/namespaces/be732687-20cf-47d2-a0e2-
2a989d15661d"
      }
    }
  }
```

```
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/namespaces?svm.name=svm1&status.state=online"
  }
}
}
```

Retrieving details for a specific NVMe namespace

In this example, the `fields` query parameter is used to request all fields, including advanced fields, that would not otherwise be returned by default for the NVMe namespace.

```
# The API:
GET /api/storage/namespaces/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/namespaces/dccdc3e6-cf4e-498f-
bec6-f7897f945669?fields=**' -H 'Accept: application/hal+json'

# The response:
{
"uuid": "dccdc3e6-cf4e-498f-bec6-f7897f945669",
"svm": {
  "uuid": "6bf967fd-2a1c-11e9-b682-005056bbc17d",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/6bf967fd-2a1c-11e9-b682-005056bbc17d"
    }
  }
},
"name": "/vol/vol1/namespace1",
"location": {
  "namespace": "namespace1",
  "volume": {
    "uuid": "71cd0dba-2a1c-11e9-b682-005056bbc17d",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/71cd0dba-2a1c-11e9-b682-
005056bbc17d"
      }
```

```
      }
    }
  },
  "auto_delete": false,
  "enabled": true,
  "comment": "Data for the research department.",
  "os_type": "linux",
  "space": {
    "block_size": 4096,
    "size": 322122547200,
    "used": 0,
    "guarantee": {
      "requested": false,
      "reserved": false
    }
  },
  "status": {
    "container_state": "online",
    "mapped": true,
    "read_only": false,
    "state": "online"
  },
  "subsystem_map": {
    "nsid": "00000001h",
    "anagrpid": "00000001h",
    "subsystem": {
      "uuid": "01f17d05-2be9-11e9-bed2-005056bbc17d",
      "name": "subsystem1",
      "_links": {
        "self": {
          "href": "/api/protocols/nvme/subsystems/01f17d05-2be9-11e9-bed2-
005056bbc17d"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/nvme/subsystem-maps/dccdc3e6-cf4e-498f-bec6-
f7897f945669/01f17d05-2be9-11e9-bed2-005056bbc17d"
      }
    }
  },
  "metric": {
    "timestamp": "2019-04-09T05:50:15Z",
    "duration": "PT15S",
    "status": "ok",
```

```
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"_links": {
  "self": {
    "href": "/api/storage/namespaces/dccdc3e6-cf4e-498f-bec6-
f7897f945669?fields=**"
  }
}
}
```

Cloning NVMe namespaces

A clone of an NVMe namespace is an independent "copy" of the namespace that shares unchanged data blocks with the original. As blocks of the source and clone are modified, unique blocks are written for each. NVMe namespace clones can be created quickly and consume very little space initially. They can be created for the purpose of back-up, or to replicate data for multiple consumers.

An NVMe namespace clone can also be set to auto-delete by setting the `auto_delete` property. If the namespace's volume is configured for automatic deletion, NVMe namespaces that have auto-delete enabled are deleted when a volume is nearly full to reclaim a target amount of free space in the volume.

Creating a new NVMe namespace clone

You create an NVMe namespace clone as you create any NVMe namespace — a POST to /storage/namespaces. Set `clone.source.uuid` or `clone.source.name` to identify the source NVMe namespace from which the clone is created. The NVMe namespace clone and its source must reside in the same volume.

The source NVMe namespace can reside in a snapshot, in which case, the `clone.source.name` field must be used to identify it. Add `/.snapshot/<snapshot_name>` to the path after the volume name to identify the snapshot. For example `/vol/vol1/.snapshot/snap1/namespace1`.

```
# The API:
POST /api/storage/namespaces

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/namespaces' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name":
"/vol/vol1/namespace2clone1", "clone": { "source": { "name":
"/vol/vol1/namespace2" } } }'
```

Over-writing an existing NVMe namespace's data as a clone of another

You can over-write an existing NVMe namespace as a clone of another. You do this as a PATCH on the NVMe namespace to overwrite — a PATCH to /storage/namespaces/{uuid}. Set the `clone.source.uuid` or `clone.source.name` property to identify the source NVMe namespace from which the clone data is taken. The NVMe namespace clone and its source must reside in the same volume.

When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete`, `subsystem_map`, `status.state`, and `uuid`.

```
# The API:
PATCH /api/storage/namespaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/namespaces/dccdc3e6-cf4e-
498f-bec6-f7897f945669' -H 'Accept: application/hal+json' -d '{ "clone": {
"source": { "name": "/vol/vol1/namespace2" } } }'
```

Converting a LUN into an NVMe namespace

An existing LUN can be converted in-place to an NVMe namespace with no modification to the data blocks. In other words, there is no additional copy created for the data blocks. There are certain requirements when converting a LUN to an NVMe namespace. For instance, the LUN should not be mapped to an initiator group, or exist as a protocol endpoint LUN, or in a foreign LUN import relationship. If the LUN exists as a VM volume, it should not be bound to a protocol endpoint LUN. Furthermore, only LUN with a supported operating system type for NVMe namespace can be converted.

The conversion process updates the metadata to the LUN, making it an NVMe namespace. The conversion is both time and space efficient. After conversion, the new namespace behaves as a regular namespace and may be mapped to an NVMe subsystem.

Convert a LUN into an NVMe namespace

You convert a LUN into an NVMe namespace by calling a POST to /storage/namespaces. Set `convert.lun.uuid` or `convert.lun.name` to identify the source LUN which is to be converted in-place into an NVMe namespace.

```
# The API:
POST /api/storage/namespaces

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/namespaces' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "convert": { "lun":
{ "name": "/vol/vol1/lun1" } } }'
```

Deleting an NVMe namespace

```
# The API:
DELETE /api/storage/namespaces/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/storage/namespaces/5c254d22-96a6-
42ac-aad8-0cd9ebd126b6' -H 'Accept: application/hal+json'
```

Retrieve NVMe namespaces

GET `/storage/namespaces`

Introduced In: 9.6

Retrieves NVMe namespaces.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `auto_delete`
- `space.physical_used`
- `space.physical_used_by_snapshots`
- `space.efficiency_ratio`
- `subsystem_map.*`
- `status.mapped`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver nvme namespace show`
- `vserver nvme subsystem map show`

Learn more

- DOC /storage/namespaces to learn more and examples.

Parameters

Name	Type	In	Required	Description
comment	string	query	False	Filter by comment • maxLength: 254 • minLength: 0
location.namespace	string	query	False	Filter by location.namespace
location.volume.uuid	string	query	False	Filter by location.volume.uuid
location.volume.name	string	query	False	Filter by location.volume.name
location.qtree.id	integer	query	False	Filter by location.qtree.id • Max value: 4994 • Min value: 0
location.qtree.name	string	query	False	Filter by location.qtree.name
location.node.uuid	string	query	False	Filter by location.node.uuid • Introduced in: 9.10
location.node.name	string	query	False	Filter by location.node.name • Introduced in: 9.10
space.block_size	integer	query	False	Filter by space.block_size
space.guarantee.reserved	boolean	query	False	Filter by space.guarantee.reserved
space.guarantee.requested	boolean	query	False	Filter by space.guarantee.requested

Name	Type	In	Required	Description
space.efficiency_ratio	number	query	False	Filter by space.efficiency_ratio • Introduced in: 9.16
space.size	integer	query	False	Filter by space.size • Max value: 140737488355328 • Min value: 4096
space.physical_used_by_snapshots	integer	query	False	Filter by space.physical_used_by_snapshots • Introduced in: 9.16
space.physical_used	integer	query	False	Filter by space.physical_used • Introduced in: 9.16
space.used	integer	query	False	Filter by space.used
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.8
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.8
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.8
consistency_group.name	string	query	False	Filter by consistency_group.name • Introduced in: 9.16
consistency_group.uuid	string	query	False	Filter by consistency_group.uuid • Introduced in: 9.16
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.8

Name	Type	In	Required	Description
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.8
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.8
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8

Name	Type	In	Required	Description
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
subsystem_map.anagrpid	string	query	False	Filter by subsystem_map.anagrpid
subsystem_map.subsystem.os_type	string	query	False	Filter by subsystem_map.subsystem.os_type • Introduced in: 9.16

Name	Type	In	Required	Description
subsystem_map.subsystem.hosts.dh_hmac_chap.group_size	string	query	False	Filter by subsystem_map.subsystem.hosts.dh_hmac_chap.group_size • Introduced in: 9.16
subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function	string	query	False	Filter by subsystem_map.subsystem.hosts.dh_hmac_chap.hash_function • Introduced in: 9.16
subsystem_map.subsystem.hosts.dh_hmac_chap.mode	string	query	False	Filter by subsystem_map.subsystem.hosts.dh_hmac_chap.mode • Introduced in: 9.16
subsystem_map.subsystem.hosts.tls.key_type	string	query	False	Filter by subsystem_map.subsystem.hosts.tls.key_type • Introduced in: 9.16
subsystem_map.subsystem.hosts.nqn	string	query	False	Filter by subsystem_map.subsystem.hosts.nqn • Introduced in: 9.16
subsystem_map.subsystem.hosts.priority	string	query	False	Filter by subsystem_map.subsystem.hosts.priority • Introduced in: 9.16

Name	Type	In	Required	Description
subsystem_map.subsystem.hosts.proximity.peer_svms.uuid	string	query	False	Filter by subsystem_map.subsystem.hosts.proximity.peer_svms.uuid • Introduced in: 9.17
subsystem_map.subsystem.hosts.proximity.peer_svms.name	string	query	False	Filter by subsystem_map.subsystem.hosts.proximity.peer_svms.name • Introduced in: 9.17
subsystem_map.subsystem.hosts.proximity.local_svm	boolean	query	False	Filter by subsystem_map.subsystem.hosts.proximity.local_svm • Introduced in: 9.17
subsystem_map.subsystem.name	string	query	False	Filter by subsystem_map.subsystem.name • maxLength: 64 • minLength: 1
subsystem_map.subsystem.uuid	string	query	False	Filter by subsystem_map.subsystem.uuid
subsystem_map.subsystem.comment	string	query	False	Filter by subsystem_map.subsystem.comment • maxLength: 255 • minLength: 0 • Introduced in: 9.16
subsystem_map.nsid	string	query	False	Filter by subsystem_map.nsid

Name	Type	In	Required	Description
name	string	query	False	Filter by name
create_time	string	query	False	Filter by create_time • Introduced in: 9.7
auto_delete	boolean	query	False	Filter by auto_delete
status.read_only	boolean	query	False	Filter by status.read_only
status.state	string	query	False	Filter by status.state
status.mapped	boolean	query	False	Filter by status.mapped
status.container_state	string	query	False	Filter by status.container_state
uuid	string	query	False	Filter by uuid
os_type	string	query	False	Filter by os_type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[nvme_namespace]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "consistency_group": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cg1",
        "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
      },
      "create_time": "2018-06-04 15:00:00 -0400",
      "location": {
        "namespace": "namespace1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "qtree": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
```

```
          },
          "id": 1,
          "name": "qt1"
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "/vol/volume1/qtree1/namespace1",
      "os_type": "string",
      "space": {
        "block_size": 512,
        "efficiency_ratio": 2.5,
        "physical_used": 1073741824,
        "physical_used_by_snapshots": 1073741824,
```

```
        "size": 1073741824,
        "used": 0
      },
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "status": {
        "container_state": "string",
        "state": "online"
      },
      "subsystem_map": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "anagrpid": "00103050h",
        "nsid": "00000001h",
        "subsystem": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "comment": "string",
          "hosts": [
            {
              "dh_hmac_chap": {
                "group_size": "string",
                "hash_function": "string",
```

```
                "mode": "bidirectional"
              },
              "nqn": "nqn.1992-01.example.com:string",
              "priority": "string",
              "proximity": {
                "peer_svms": [
                  {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "name": "peer1",
                    "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                  }
                ]
              },
              "tls": {
                "key_type": "configured"
              }
            }
          ],
          "name": "subsystem1",
          "os_type": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

source

The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace.

Valid in POST to create a new NVMe namespace as a clone of the source.

Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

clone

This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired.

When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

consistency_group

The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported.
A namespace's consistency group is the consistency group of its containing volume.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

lun

The source LUN for convert operation. This can be specified using property `convert.lun.uuid` or `convert.lun.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST. A convert request from LUN to NVMe namespace cannot be combined with setting any other namespace properties. All other properties of the converted NVMe namespace come from the source LUN.

convert

This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.

node

The cluster node that hosts the NVMe namespace.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

qtree

The qtree in which the NVMe namespace is optionally located. Valid in POST.

If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree.

NVMe namespaces do not support rename.

Name	Type	Description
_links	_links	
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the NVMe namespace is located. Valid in POST.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

NVMe namespaces do not support movement between volumes.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the NVMe namespace within the ONTAP cluster.
NVMe namespaces do not support rename, or movement between volumes. Valid in POST.

Name	Type	Description
namespace	string	The base name component of the NVMe namespace. Valid in POST. If properties `name` and `location.namespace` are specified in the same request, they must refer to the base name. NVMe namespaces do not support rename.
node	node	The cluster node that hosts the NVMe namespace.

Name	Type	Description
qtree	qtree	The qtree in which the NVMe namespace is optionally located. Valid in POST. If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree. NVMe namespaces do not support rename.
volume	volume	The volume in which the NVMe namespace is located. Valid in POST. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. NVMe namespaces do not support movement between volumes.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

self_link

Name	Type	Description
self	href	

qos_policy

The QoS policy for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume. If no `qos_policy` is provided, a policy is be set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
_links	self_link	
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_service

Determines the placement of the namespace based on the value specified. Valid in POST.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

object_stores

tiering

The tiering placement and policy definitions for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace in bytes. The default for namespaces with an `os_type` of *vmware* is *512*. All other namespaces default to *4096*. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.
efficiency_ratio	number	The storage efficiency ratio of the namespace without snapshots. (Logical Used / Used) This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
physical_used	integer	The number of bytes consumed on the disk by the namespace, excluding snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the namespace's snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not be made smaller using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used and an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped.

Name	Type	Description
_links	_links	
comment	string	A configurable comment for the NVMe subsystem. Optional in POST.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Optional in POST.

Name	Type	Description
os_type	string	The host operating system of the NVMe subsystem's hosts. Optional in POST.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
These properties are supported only for GET.

Name	Type	Description
_links	_links	
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_namespace

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
_links	_links	

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
create_time	string	The time the NVMe namespace was created.

Name	Type	Description
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
location	location	The location of the NVMe namespace within the ONTAP cluster. NVMe namespaces do not support rename, or movement between volumes. Valid in POST. • Introduced in: 9.6 • readCreate: 1
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.

Name	Type	Description
space	space	The storage space related properties of the NVMe namespace.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	status	Status information about the NVMe namespace.
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported only for GET.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the NVMe namespace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an NVMe namespace

POST `/storage/namespaces`

Introduced In: 9.6

Creates an NVMe namespace.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the NVMe namespace.
- `name`, `location.volume.name` or `location.volume.uuid` - Existing volume in which to create the NVMe namespace.
- `name` or `location.namespace` - Base name for the NVMe namespace.
- `os_type` - Operating system from which the NVMe namespace will be accessed. (Not used for clones, which are created based on the `os_type` of the source NVMe namespace.)
- `space.size` - Size for the NVMe namespace. (Not used for clones, which are created based on the size of the source NVMe namespace.)

Default property values

If not specified in POST, the following default property values are assigned:

- `auto_delete` - *false*
- `space.block_size` - *4096* (*512* when 'os_type' is *vmware*)

Related ONTAP commands

- `volume file clone autodelete`
- `volume file clone create`
- `vserver nvme namespace convert-from-lun`
- `vserver nvme namespace create`

POST is asynchronous when creating a new namespace. It is synchronous when converting a LUN to a namespace via the `convert` property.

Learn more

- DOC /storage/namespaces

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
clone	clone	This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired. When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
convert	convert	This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
location	location	The location of the NVMe namespace within the ONTAP cluster. NVMe namespaces do not support rename, or movement between volumes. Valid in POST. • Introduced in: 9.6 • readCreate: 1

Name	Type	Description
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
space	space	The storage space related properties of the NVMe namespace.
status	status	Status information about the NVMe namespace.

Name	Type	Description
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported only for GET.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the NVMe namespace.

Example request

```
{
  "clone": {
    "source": {
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "comment": "string",
  "consistency_group": {
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "convert": {
    "lun": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "location": {
    "namespace": "namespace1",
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "qtree": {
      "id": 1,
      "name": "qt1"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "name": "/vol/volume1/qtree1/namespace1",
  "os_type": "string",
  "provisioning_options": {
    "qos_policy": {
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "snapshot_policy": {
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
    },
    "storage_service": {
      "name": "string"
    },
    "tiering": {
      "control": "string",
      "object_stores": [
        {
          "name": "string"
        }
      ],
      "policy": "string"
    }
  },
  "space": {
    "block_size": 512,
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "status": {
    "container_state": "string",
    "state": "online"
  },
  "subsystem_map": {
    "anagrpid": "00103050h",
    "nsid": "00000001h",
    "subsystem": {
      "comment": "string",
      "hosts": [
        {
          "dh_hmac_chap": {
            "controller_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "group_size": "string",
            "hash_function": "string",
            "host_secret_key": "DHHC-
1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
            "mode": "bidirectional"
          },
          "nqn": "nqn.1992-01.example.com:string",
          "priority": "string",
          "proximity": {
            "peer_svms": [
```

```
                {
                  "name": "peer1",
                  "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                }
              ]
            },
            "tls": {
              "configured_psk": "NVMeTLSkey-
1:01:VRLbtnN9AQb2WXW3c9+wEf/DRLz0QuLdbYvEhwtdWwNf9LrZ:",
              "key_type": "configured"
            }
          }
        ],
        "name": "subsystem1",
        "os_type": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917927	The specified volume was not found.
918236	The specified `location.volume.uuid` and `location.volume.name` do not refer to the same volume.
1254197	The LUN specified for conversion to a namespace is mapped.
1260121	Cloning a namespace to a volume different than the source volume is not supported.
1260136	The specified destination for a clone operation already exists as a LUN, namespace, or file.
2621462	The supplied SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5242927	The specified qtree was not found.
5242950	The specified `location.qtree.id` and `location.qtree.name` do not refer to the same qtree.
5374127	The specified namespace name is invalid.
5374140	LUN has a non-zero prefix and/or suffix size.
5374141	LUN is part of a SnapMirror active sync relationship.
5374156	A protocol endpoint LUN cannot be converted to an NVMe namespace.

Error Code	Description
5374157	LUN in an SVM with MetroCluster configured cannot be converted to an NVMe namespace.
5374158	LUN contains an operating system type that is not supported for NVMe namespace.
5374352	An invalid name was provided for the NVMe namespace.
5374858	The volume specified by `name` is not the same as that specified by `location.volume`.
5374860	The qtree specified by `name` is not the same as that specified by `location.qtree`.
5374861	The NVME namespace base name specified by `name` is not the same as that specified by `location.name`.
5374862	No NVMe namespace path base name was provided for the namespace.
5374876	The LUN specified for conversion to a namespace was not found.
5376461	The specified namespace name is invalid.
5376462	The specified namespace name is too long.
5376463	The snapshot portion of the specified namespace name is too long.
5440509	No suitable storage can be found for the specified requirements.
13565952	The NVMe namespace clone request failed.
72089636	Creating NVMe namespaces with `os_type` AIX is not supported until the effective cluster version is 9.13.1 or later.
72089720	NVMe namespaces cannot be created in snapshots.
72089721	The volume specified is in a load sharing mirror relationship. Namespaces are not supported in load sharing mirrors.
72089722	A negative size was provided for the NVMe namespace.
72089723	The specified size is too small for the NVMe namespace.
72089724	The specified size is too large for the NVMe namespace.
72089725	A LUN or NVMe namespace already exists at the specified path.
72089727	NVMe namespaces cannot be created on an SVM root volume.

Error Code	Description
72089728	NVMe namespaces cannot be created on a FlexGroup volume.
72089732	An NVMe namespace name can only contain characters A-Z, a-z, 0-9, "-", ".", "_", "{" and "}".
72090005	The specified `clone.source.uuid` and `clone.source.name` do not refer to the same NVMe namespace.
72090006	The specified `clone.source` was not found.
72090007	The specified `clone.source` was not found.
72090009	An error occurred after successfully creating the NVMe namespace. Some properties were not set.
72090012	The property cannot be specified when creating an NVMe namespace clone. The `target` property of the error object identifies the property.
72090013	The property is required except when creating an NVMe namespace clone. The `target` property of the error object identifies the property.
72090014	No volume was specified for the NVMe namespace.
72090015	An error occurred after successfully creating the NVMe namespace preventing the retrieval of its properties.
72090033	The `clone.source.uuid` property is not supported when specifying a source NVMe namespace from a snapshot.
72090039	The property cannot be specified at the same time when creating an NVMe namespace as a clone. The `target` property of the error object identifies the other property given with clone.
72090040	The property cannot be specified when converting a LUN into an NVMe namespace. The `target` property of the error object identifies the property.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

source

The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace.

Valid in POST to create a new NVMe namespace as a clone of the source.

Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.
uuid	string	The unique identifier of the clone source NVMe namespace. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired.

When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

Name	Type	Description
source	source	The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace. Valid in POST to create a new NVMe namespace as a clone of the source. Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

consistency_group

The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported.
A namespace's consistency group is the consistency group of its containing volume.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

lun

The source LUN for convert operation. This can be specified using property `convert.lun.uuid` or `convert.lun.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST. A convert request from LUN to NVMe namespace cannot be combined with setting any other namespace properties. All other properties of the converted NVMe namespace come from the source LUN.

Name	Type	Description
name	string	The name of the source LUN. Valid in POST. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.
uuid	string	The unique identifier of the source LUN. Valid in POST.

convert

This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.

Name	Type	Description
lun	lun	The source LUN for convert operation. This can be specified using property `convert.lun.uuid` or `convert.lun.name`. If both properties are supplied, they must refer to the same LUN. Valid in POST. A convert request from LUN to NVMe namespace cannot be combined with setting any other namespace properties. All other properties of the converted NVMe namespace come from the source LUN.

node

The cluster node that hosts the NVMe namespace.

Name	Type	Description
name	string	
uuid	string	

qtree

The qtree in which the NVMe namespace is optionally located. Valid in POST.

If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree.

NVMe namespaces do not support rename.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the NVMe namespace is located. Valid in POST.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

NVMe namespaces do not support movement between volumes.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the NVMe namespace within the ONTAP cluster.
NVMe namespaces do not support rename, or movement between volumes. Valid in POST.

Name	Type	Description
namespace	string	The base name component of the NVMe namespace. Valid in POST. If properties `name` and `location.namespace` are specified in the same request, they must refer to the base name. NVMe namespaces do not support rename.
node	node	The cluster node that hosts the NVMe namespace.
qtree	qtree	The qtree in which the NVMe namespace is optionally located. Valid in POST. If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree. NVMe namespaces do not support rename.
volume	volume	The volume in which the NVMe namespace is located. Valid in POST. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. NVMe namespaces do not support movement between volumes.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

self_link

qos_policy

The QoS policy for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume. If no `qos_policy` is provided, a policy is be set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage_service

Determines the placement of the namespace based on the value specified. Valid in POST.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
auto	boolean	If the volume specified in the request does not exist, automatically provision one of appropriate size. If the volume does exist, resize it to accommodate the new namespace. This property is only supported on Unified ONTAP. The following behavior is different from a traditional POST request: • The operation is asynchronous. • The `qos_policy` property is supported and is applied to the provisioned volume. A default QoS policy is applied to the volume if one is not provided. • The `provisioning_options.count` property is supported, provisioning *count* namespaces on the volume using the specified properties. • The `subsystem_map` property is supported. If the specified subsystem does not exist, it is created. The namespace is mapped to this subsystem. If a subsystem is provisioned in this way, it is deleted after it is no longer mapped to any namespaces. • The `clone` and `convert` properties are not supported. • When performing `records` based operations, specifying this property in the query applies to the entire operation. Specifying it for an individual record within the request applies to only that record. • Many other `provisioning_options` properties are supported to control the placement of the namespace and the properties of the volume

Name	Type	Description
count	integer	The number of namespaces to provision with these properties. Only POST requests based on `space.size` are supported. When provided, the name is considered a prefix, and a suffix of the form _<*N*> is generated where N is the next available numeric index, starting with 1.
qos_policy	qos_policy	The QoS policy for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume. If no `qos_policy` is provided, a policy is be set based on the `storage_service.name`, which defaults to the most performant service available.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
storage_service	storage_service	Determines the placement of the namespace based on the value specified. Valid in POST.
tiering	tiering	The tiering placement and policy definitions for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume.
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning the volume to host the namespace. Only mirrored aggregates are used if this parameter is set to *true* and only unmirrored aggregates are used if this parameter is set to *false*. The default value is *true* for a MetroCluster configuration and is *false* for a non-MetroCluster configuration.

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace in bytes. The default for namespaces with an `os_type` of *vmware* is *512*. All other namespaces default to *4096*. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.
efficiency_ratio	number	The storage efficiency ratio of the namespace without snapshots. (Logical Used / Used) This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
physical_used	integer	The number of bytes consumed on the disk by the namespace, excluding snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the namespace's snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not be made smaller using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used and an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
controller_secret_key	string	The controller secret for NVMe in-band authentication. The value of this property is used by the NVMe host to authenticate the NVMe controller while establishing a connection. If unset, the controller is not authenticated. When supplied, the property `host_secret_key` must also be supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a controller secret has been set for the host, but the controller secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.

Name	Type	Description
host_secret_key	string	The host secret for NVMe in-band authentication. The value of this property is used by the NVMe controller to authenticate the NVMe host while establishing a connection. If unset, no authentication is performed by the host or controller. This property must be supplied if any other NVMe in-band authentication properties are supplied. Optional in POST. This property is write-only. The `mode` property can be used to identify if a host secret has been set for the host, but the host secret value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
configured_psk	string	A user supplied pre-shared key (PSK) value in PSK Interchange Format. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. This property is only allowed when `key_type` is `configured`. If `configured_psk` is supplied and `key_type` is unset, `key_type` defaults to `configured`. This property is write-only. The `key_type` property can be used to identify if a configured PSK has been set for the host, but the PSK value cannot be read. To change the value, the host must be deleted from the subsystem and re-added.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped.

Name	Type	Description
comment	string	A configurable comment for the NVMe subsystem. Optional in POST.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Optional in POST.
os_type	string	The host operating system of the NVMe subsystem's hosts. Optional in POST.

Name	Type	Description
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
These properties are supported only for GET.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_namespace

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem's hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
clone	clone	This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired. When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
convert	convert	This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
location	location	The location of the NVMe namespace within the ONTAP cluster. NVMe namespaces do not support rename, or movement between volumes. Valid in POST. • Introduced in: 9.6 • readCreate: 1

Name	Type	Description
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
space	space	The storage space related properties of the NVMe namespace.
status	status	Status information about the NVMe namespace.

Name	Type	Description
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported only for GET.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the NVMe namespace.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an NVMe namespace

GET `/storage/namespaces/{nvme_namespace.uuid}/metrics`

Introduced In: 9.14

Retrieves historical space and performance metrics for an NVMe namespace.

Related ONTAP commands

- `statistics namespace show`

Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total

Name	Type	In	Required	Description
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
uuid	string	query	False	Filter by uuid
status	string	query	False	Filter by status
nvme_namespace.uuid	string	path	True	The unique identifier of the NVMe namespace.
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the NVMe namespace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an NVMe namespace for a specific time

GET `/storage/namespaces/{nvme_namespace.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical space and performance metrics for an NVMe namespace for a specific time.

Related ONTAP commands

- `statistics namespace show`

Parameters

Name	Type	In	Required	Description
nvme_namespace.uuid	string	path	True	The unique identifier of the NVMe namespace.
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the NVMe namespace.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an NVMe namespace

DELETE `/storage/namespaces/{uuid}`

Introduced In: 9.6

Deletes an NVMe namespace.

Related ONTAP commands

- `vserver nvme namespace delete`

Learn more

- DOC /storage/namespaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe namespace to delete.
allow_delete_while_mapped	boolean	query	False	Allows deletion of a mapped NVMe namespace. A mapped NVMe namespace might be in use. Deleting a mapped namespace also deletes the namespace map and makes the data no longer available, possibly causing a disruption in the availability of data. **This parameter should be used with caution.** • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The specified namespace was not found.
72089796	The namespace must be unmapped before deletion.
72090016	The namespace's aggregate is offline. The aggregate must be online to modify or remove the namespace.
72090017	The namespace's volume is offline. The volume must be online to modify or remove the namespace.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an NVMe namespace

GET `/storage/namespaces/{uuid}`

Introduced In: 9.6

Retrieves an NVMe namespace.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `auto_delete`
- `space.physical_used`
- `space.physical_used_by_snapshots`
- `space.efficiency_ratio`
- `subsystem_map.*`
- `status.mapped`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver nvme namespace show`
- `vserver nvme subsystem map show`

Learn more

- DOC /storage/namespaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe namespace to retrieve.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
create_time	string	The time the NVMe namespace was created.

Name	Type	Description
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
location	location	The location of the NVMe namespace within the ONTAP cluster. NVMe namespaces do not support rename, or movement between volumes. Valid in POST. • Introduced in: 9.6 • readCreate: 1
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
os_type	string	The operating system type of the NVMe namespace. Required in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone.

Name	Type	Description
space	space	The storage space related properties of the NVMe namespace.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	status	Status information about the NVMe namespace.
subsystem_map	subsystem_map	The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems. There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported only for GET.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the NVMe namespace.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "consistency_group": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "location": {
    "namespace": "namespace1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "qtree": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 1,
      "name": "qt1"
    },
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
```

```
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "/vol/volume1/qtree1/namespace1",
  "os_type": "string",
  "space": {
    "block_size": 512,
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
```

```
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "status": {
    "container_state": "string",
    "state": "online"
  },
  "subsystem_map": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "anagrpid": "00103050h",
    "nsid": "00000001h",
    "subsystem": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "hosts": [
        {
          "dh_hmac_chap": {
            "group_size": "string",
            "hash_function": "string",
            "mode": "bidirectional"
          },
          "nqn": "nqn.1992-01.example.com:string",
          "priority": "string",
          "proximity": {
            "peer_svms": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
```

```
                  },
                  "name": "peer1",
                  "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
                }
              ]
            },
            "tls": {
              "key_type": "configured"
            }
          }
        ],
        "name": "subsystem1",
        "os_type": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
72090006	The specified namespace was not found.
72090007	The specified namespace was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

source

The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace.

Valid in POST to create a new NVMe namespace as a clone of the source.

Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

clone

This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired.

When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

consistency_group

The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported.
A namespace's consistency group is the consistency group of its containing volume.

Name	Type	Description
_links	_links	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

lun

The source LUN for convert operation. This can be specified using property `convert.lun.uuid` or `convert.lun.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST. A convert request from LUN to NVMe namespace cannot be combined with setting any other namespace properties. All other properties of the converted NVMe namespace come from the source LUN.

convert

This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.

node

The cluster node that hosts the NVMe namespace.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

qtree

The qtree in which the NVMe namespace is optionally located. Valid in POST.

If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree.

NVMe namespaces do not support rename.

Name	Type	Description
_links	_links	
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the NVMe namespace is located. Valid in POST.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

NVMe namespaces do not support movement between volumes.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the NVMe namespace within the ONTAP cluster.
NVMe namespaces do not support rename, or movement between volumes. Valid in POST.

Name	Type	Description
namespace	string	The base name component of the NVMe namespace. Valid in POST. If properties `name` and `location.namespace` are specified in the same request, they must refer to the base name. NVMe namespaces do not support rename.
node	node	The cluster node that hosts the NVMe namespace.

Name	Type	Description
qtree	qtree	The qtree in which the NVMe namespace is optionally located. Valid in POST. If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree. NVMe namespaces do not support rename.
volume	volume	The volume in which the NVMe namespace is located. Valid in POST. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. NVMe namespaces do not support movement between volumes.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

self_link

Name	Type	Description
self	href	

qos_policy

The QoS policy for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume. If no `qos_policy` is provided, a policy is be set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
_links	self_link	
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_service

Determines the placement of the namespace based on the value specified. Valid in POST.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

object_stores

tiering

The tiering placement and policy definitions for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
block_size	integer	The size of blocks in the namespace in bytes. The default for namespaces with an `os_type` of *vmware* is *512*. All other namespaces default to *4096*. Valid in POST when creating an NVMe namespace that is not a clone of another. Disallowed in POST when creating a namespace clone. Valid in POST.
efficiency_ratio	number	The storage efficiency ratio of the namespace without snapshots. (Logical Used / Used) This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
physical_used	integer	The number of bytes consumed on the disk by the namespace, excluding snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the namespace's snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not be made smaller using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used and an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
group_size	string	The Diffie-Hellman group size for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `2048_bit`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
hash_function	string	The hash function for NVMe in-band authentication. When property `host_secret_key` is provided, this property defaults to `sha_256`. When supplied, the property `host_secret_key` must also be supplied. Optional in POST.
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

Name	Type	Description
key_type	string	The method by which the TLS pre-shared key (PSK) is configured for the host. Optional in POST. The values for property `key_type` and property `configured_psk` must logically agree. Possible values: • `none` - TLS is not configured for the host connection. No value is allowed for property `configured_psk`. • `configured` - A user supplied PSK is configured for the NVMe/TCP-TLS transport connection between the host and the NVMe subsystem. A valid value for property `configured_psk` is required. This property defaults to `none` unless a value is supplied for `configured_psk` in which case it defaults to `configured`.

hosts

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
dh_hmac_chap	consistency_group_nvme_host_dh_hmac_chap	A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.
nqn	string	The NVMe qualified name (NQN) used to identify the NVMe storage target.

Name	Type	Description
priority	string	The host priority setting allocates appropriate NVMe I/O queues (count and depth) for the host to submit I/O commands. Absence of this property in GET implies io_queue count and I/O queue depth are being used.
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.
tls	tls	A container for the configuration for NVMe/TCP-TLS transport session for the host.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped.

Name	Type	Description
_links	_links	
comment	string	A configurable comment for the NVMe subsystem. Optional in POST.
hosts	array[hosts]	The NVMe hosts configured for access to the NVMe subsystem. Optional in POST.
name	string	The name of the NVMe subsystem. Once created, an NVMe subsystem cannot be renamed. Optional in POST.

Name	Type	Description
os_type	string	The host operating system of the NVMe subsystem's hosts. Optional in POST.
uuid	string	The unique identifier of the NVMe subsystem.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
These properties are supported only for GET.

Name	Type	Description
_links	_links	
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
subsystem	subsystem	The NVMe subsystem to which the NVMe namespace is mapped.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an NVMe namespace

PATCH `/storage/namespaces/{uuid}`

Introduced In: 9.6

Updates an NVMe namespace.

Related ONTAP commands

- `volume file clone autodelete`
- `vserver nvme namespace modify`

Learn more

- DOC /storage/namespaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the NVMe namespace to update.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
clone	clone	This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired. When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

Name	Type	Description
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
create_time	string	The time the NVMe namespace was created.
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
space	space	The storage space related properties of the NVMe namespace.

Name	Type	Description
status	status	Status information about the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

Example request

```
{
  "clone": {
    "source": {
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "comment": "string",
  "consistency_group": {
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "name": "/vol/volume1/qtree1/namespace1",
  "space": {
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "status": {
    "container_state": "string",
    "state": "online"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374127	The specified namespace name is invalid.
5376461	The specified namespace name is invalid.
5376462	The specified namespace name is too long.
5376463	The snapshot portion of the specified namespace name is too long.
5376466	An attempt was made to rename an NVMe namespace to a snapshot name.
5376467	An attempt was made to rename a primary NVMe namespace to a secondary name.
5376468	An attempt was made to rename an NVMe namespace to a reserved name.
13565952	The namespace clone request failed.
72089724	The specified namespace size is too large.
72089730	The specified namespace cannot be updated as it resides in a snapshot.
72090005	The specified `clone.source.uuid` and `clone.source.name` do not refer to the same LUN.
72090006	The specified namespace was not found. This can apply to `clone.source` or the target namespace. The `target` property of the error object identifies the property.
72090007	The specified namespace was not found. This can apply to `clone.source` or the target namespace. The `target` property of the error object identifies the property.
72090010	An error occurred after successfully overwriting data for the namespace as a clone. Some properties were not modified.
72090011	An error occurred after successfully modifying some of the properties of the namespace. Some properties were not modified.

Error Code	Description
72090016	The namespace's aggregate is offline. The aggregate must be online to modify or remove the namespace.
72090017	The namespace's volume is offline. The volume must be online to modify or remove the namespace.
72090038	An attempt was made to reduce the size of the specified namespace.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

source

The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace.

Valid in POST to create a new NVMe namespace as a clone of the source.

Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.
uuid	string	The unique identifier of the clone source NVMe namespace. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired.

When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.

Name	Type	Description
source	source	The source NVMe namespace for a namespace clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same namespace. Valid in POST to create a new NVMe namespace as a clone of the source. Valid in PATCH to overwrite an existing NVMe namespace's data as a clone of another.

consistency_group

The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported.
A namespace's consistency group is the consistency group of its containing volume.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

lun

The source LUN for convert operation. This can be specified using property `convert.lun.uuid` or `convert.lun.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST. A convert request from LUN to NVMe namespace cannot be combined with setting any other namespace properties. All other properties of the converted NVMe namespace come from the source LUN.

convert

This sub-object is used in POST to convert a valid in-place LUN to an NVMe namespace. Setting a property in this sub-object indicates that a conversion from the specified LUN to NVMe namespace is desired.

node

The cluster node that hosts the NVMe namespace.

Name	Type	Description
name	string	
uuid	string	

qtree

The qtree in which the NVMe namespace is optionally located. Valid in POST.

If properties `name` and `location.qtree.name` and/or `location.qtree.uuid` are specified in the same request, they must refer to the same qtree.

NVMe namespaces do not support rename.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the NVMe namespace is located. Valid in POST.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

NVMe namespaces do not support movement between volumes.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the NVMe namespace within the ONTAP cluster.
NVMe namespaces do not support rename, or movement between volumes. Valid in POST.

Name	Type	Description
node	node	The cluster node that hosts the NVMe namespace.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

self_link

qos_policy

The QoS policy for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume. If no `qos_policy` is provided, a policy is be set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.

Name	Type	Description
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage_service

Determines the placement of the namespace based on the value specified. Valid in POST.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for the volume provisioned to host the namespace. This property is only supported when the request provisions a new volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

provisioning_options

Options that are applied to the operation.

guarantee

Properties that request and report the space guarantee for the NVMe namespace.

Name	Type	Description
requested	boolean	The requested space reservation policy for the NVMe namespace. If *true*, a space reservation is requested for the namespace; if *false*, the namespace is thin provisioned. Guaranteeing a space reservation request for a namespace requires that the volume in which the namespace resides also be space reserved and that the fractional reserve for the volume be 100%. The space reservation policy for an NVMe namespace is determined by ONTAP. • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
reserved	boolean	Reports if the NVMe namespace is space guaranteed. This property is *true* if a space guarantee is requested and the containing volume and aggregate support the request. This property is *false* if a space guarantee is not requested or if a space guarantee is requested and either the containing volume and aggregate do not support the request.

space

The storage space related properties of the NVMe namespace.

Name	Type	Description
efficiency_ratio	number	The storage efficiency ratio of the namespace without snapshots. (Logical Used / Used) This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the NVMe namespace.
physical_used	integer	The number of bytes consumed on the disk by the namespace, excluding snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the namespace's snapshots. This property is not available on the namespace object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
size	integer	The total provisioned size of the NVMe namespace. Valid in POST and PATCH. The NVMe namespace size can be increased but not be made smaller using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes in bytes. The maximum size is variable with respect to large NVMe namespace support in ONTAP. If large namespaces are supported, the maximum size is 128 TB (140737488355328 bytes) and if not supported, the maximum size is just under 16 TB (17557557870592 bytes). The minimum size supported is always 4096 bytes. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the NVMe namespace. This value is the total space consumed in the volume by the NVMe namespace, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways NVMe filesystems and applications utilize blocks within a namespace, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the namespace blocks are utilized outside of ONTAP, this property should not be used and an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

status

Status information about the NVMe namespace.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the NVMe namespace. Namespaces are only available when their containers are available.
mapped	boolean	Reports if the NVMe namespace is mapped to an NVMe subsystem. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the NVMe namespace allows only read access.
state	string	The state of the NVMe namespace. Normal states for a namespace are *online* and *offline*. Other states indicate errors.

consistency_group_nvme_host_dh_hmac_chap

A container for the configuration of NVMe in-band authentication using the DH-HMAC-CHAP protocol for a host.

Name	Type	Description
mode	string	The expected NVMe in-band authentication mode for the host. This property is an indication of which secrets are configured for the host. When set to: • none: The host has neither the host nor controller secret configured, and no authentication is performed. • unidirectional: The host has a host secret configured. The controller will authenticate the host. • bidirectional: The host has both a host and controller secret configured. The controller will authenticate the host and the host will authenticate the controller.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests.

These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the host is proximal to the SVM for which it is configured.

Name	Type	Description
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the host is proximal.

tls

A container for the configuration for NVMe/TCP-TLS transport session for the host.

hosts

The NVMe host provisioned to access NVMe namespaces mapped to a subsystem.

Name	Type	Description
proximity	proximity	Properties that define the SVMs to which the host is proximal. This information is used to properly report active optimized and active non-optimized network paths using an NVMe controller. If no configuration has been specified for the host, the sub-object is not present in GET requests. These properties apply to all instances of the host in the NVMe subsystem in the SVM and its peers.

subsystem

The NVMe subsystem to which the NVMe namespace is mapped.

subsystem_map

The NVMe subsystem with which the NVMe namespace is associated. A namespace can be mapped to zero (0) or one (1) subsystems.

There is an added computational cost to retrieving property values for `subsystem_map`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
These properties are supported only for GET.

Name	Type	Description
anagrpid	string	The Asymmetric Namespace Access Group ID (ANAGRPID) of the NVMe namespace. The format for an ANAGRPID is 8 hexadecimal digits (zero-filled) followed by a lower case "h".
nsid	string	The NVMe namespace identifier. This is an identifier used by an NVMe controller to provide access to the NVMe namespace. The format for an NVMe namespace identifier is 8 hexadecimal digits (zero-filled) followed by a lower case "h".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nvme_namespace

An NVMe namespace is a collection of addressable logical blocks presented to hosts connected to the storage virtual machine using the NVMe over Fabrics protocol.

An NVMe namespace must be mapped to an NVMe subsystem to grant access to the subsystem’s hosts. Hosts can then access the NVMe namespace and perform I/O using the NVMe over Fabrics protocol.

See the NVMe namespace object model to learn more about each of the properties supported by the NVMe namespace REST API.

An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume.

NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.

An NVMe namespace is created to a specified size using thin or thick provisioning as determined by the volume on which it is created. An NVMe namespace can then be resized or cloned. An NVMe namespace

cannot be renamed, or moved to a different volume. NVMe namespaces do not support the assignment of a QoS policy for performance management, but a QoS policy can be assigned to the volume containing the namespace.

</namespace></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the NVMe namespace for auto deletion when the volume containing the namespace runs out of space. This is most commonly set on namespace clones. When set to *true*, the NVMe namespace becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the namespace is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new NVMe namespace is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new NVMe namespace as a clone of an existing namespace, or PATCH to overwrite an existing namespace as a clone of another. Setting a property in this sub-object indicates that a namespace clone is desired. When used in a PATCH, the patched NVMe namespace's data is over-written as a clone of the source and the following properties are preserved from the patched namespace unless otherwise specified as part of the PATCH: `auto_delete` (unless specified in the request), `subsystem_map`, `status.state`, and `uuid`.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The namespace's consistency group. This property is populated for namespaces that are members of a consistency group. If the namespace is a member of a child consistency group, the parent consistency group is reported. A namespace's consistency group is the consistency group of its containing volume.
create_time	string	The time the NVMe namespace was created.

Name	Type	Description
enabled	boolean	The enabled state of the NVMe namespace. Certain error conditions cause the namespace to become disabled. If the namespace is disabled, check the `status.state` property to determine what error disabled the namespace. An NVMe namespace is enabled automatically when it is created.
name	string	The name of the NVMe namespace. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Renaming an NVMe namespace is not supported. Valid in POST.
space	space	The storage space related properties of the NVMe namespace.
status	status	Status information about the NVMe namespace.
uuid	string	The unique identifier of the NVMe namespace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Name-services

Name-services overview

Overview

ONTAP uses name-services to obtain information about users and clients. This information is used to authenticate users accessing data on or administering the storage system, and to map user credentials in a mixed environment. If the user database is stored in NIS or LDAP servers, NIS and LDAP name services need to be configured in ONTAP.
DNS is used for resolving the hostnames. ns-switch is used to configure the SVMs with sources to search for network information and the order in which to search them.

Manage group membership cache settings

Name-services cache group-membership settings endpoint overview

Overview

This API is used to retrieve and manage group-membership cache settings.

Examples

Retrieving group-membership cache settings

The following example shows how to use the cache group-membership settings GET endpoint to retrieve group-membership cache settings.

```
# The API:
GET /api/name-services/cache/group-membership/settings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/group-
membership/settings?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
      "name": "vs43"
    },
    "enabled": true,
    "ttl": "PT1H"
  },
  {
    "svm": {
      "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
      "name": "vs34"
    },
    "enabled": true,
    "ttl": "PT5M"
  }
],
"num_records": 2
}
```

Retrieving group-membership cache settings for a given SVM

The following example shows how to use the cache group-membership settings GET endpoint to retrieve group-membership cache settings for a given SVM.

```
# The API:
GET /api/name-services/cache/group-membership/settings/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/group-
membership/settings/dc458b2f-2035-11ec-bfe2-005056bb6bef" -H "accept:
application/hal+json"

# The response:
{
"svm": {
  "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
  "name": "vs34"
},
"enabled": true,
"ttl": "PT1H"
}
```

Updating a group-membership cache setting

The following example shows how to use the cache group-membership settings PATCH endpoint to update a group-membership setting.

```
# The API:
PATCH /api/name-services/cache/group-membership/settings/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/cache/unix-
user/settings/02c9e252-41be-11e9-81d5-00a0986138f9" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"enabled\":
\"false\" }"
```

Retrieve group membership cache settings

GET `/name-services/cache/group-membership/settings`

Introduced In: 9.11

Retrieves group-membership cache settings.

Related ONTAP commands

- `vserver services name-service cache group-membership settings show`

Learn more

- DOC /name-services/cache/group-membership/settings

Parameters

Name	Type	In	Required	Description
ttl	string	query	False	Filter by ttl
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[group_membership_settings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "ttl": "PT2H30M"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_membership_settings

Group membership cache setting.

Name	Type	Description
_links	_links	
enabled	boolean	Specifies whether or not the cache is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
ttl	string	Specifies Time to Live for list of group members, in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a group membership cache setting for an SVM

GET `/name-services/cache/group-membership/settings/{svm.uuid}`

Introduced In: 9.11

Retrieves a group-membership cache setting for a given SVM.

Related ONTAP commands

- `vserver services name-service cache group-membership settings show`

Learn more

- DOC /name-services/cache/group-membership/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.

Name	Type	In	Required	Description
ttl	string	query	False	Filter by ttl
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Specifies whether or not the cache is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live for list of group members, in ISO 8601 format.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT2H30M"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a group membership cache setting

PATCH `/name-services/cache/group-membership/settings/{svm.uuid}`

Introduced In: 9.11

Updates a group-membership cache setting.

Important notes

- svm.uuid field cannot be empty.
- Returns success in case no values are provided for update.

Related ONTAP commands

- `vserver services name-service cache group-membership settings modify`

Learn more

- DOC /name-services/cache/group-membership/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.

Request Body

Name	Type	Description
enabled	boolean	Specifies whether or not the cache is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live for list of group members, in ISO 8601 format.

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT2H30M"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

group_membership_settings

Group membership cache setting.

Name	Type	Description
enabled	boolean	Specifies whether or not the cache is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live for list of group members, in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage host cache settings

Name-services cache host settings endpoint overview

Overview

This API is used to retrieve and manage hosts cache settings.

Examples

Retrieving hosts cache settings

The following examples shows how to use the cache host settings GET endpoint to retrieve host cache settings.

```
# The API:
GET /api/name-services/cache/host/settings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-
services/cache/host/settings?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
    "svm": {
      "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
      "name": "vs43"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "dns_ttl_enabled": true
  },
  {
    "uuid": "951e8676-2035-11ec-bfe2-005056bb6bef",
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "dns_ttl_enabled": true
  },
  {
    "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
    "svm": {
      "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
      "name": "vs34"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "dns_ttl_enabled": true
  }
],
"num_records": 3
}
```

Retrieving host cache settings for a given SVM

The following examples shows how to use the cache hosts settings GET endpoint to retrieve hosts cache settings for a specific SVM.

```
# The API:
GET /api/name-services/cache/host/settings/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-
services/cache/host/settings/dc458b2f-2035-11ec-bfe2-005056bb6bef" -H
"accept: application/hal+json"

# The response:
{
"uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
"svm": {
  "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
  "name": "vs34"
},
"enabled": false,
"negative_cache_enabled": true,
"ttl": "P1D",
"negative_ttl": "PT1M",
"dns_ttl_enabled": true
}
```

Updating a hosts cache setting

The following example shows how to use the cache host settings PATCH endpoint to update a host cache setting.

```
# The API:
PATCH /api/name-services/cache/host/settings/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-
services/cache/host/settings/02c9e252-41be-11e9-81d5-00a0986138f9" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"ttl\": \"PT2H\", \"negative_ttl\": \"PT2M\" }"
```

Retrieve host cache settings

GET `/name-services/cache/host/settings`

Introduced In: 9.11

Retrieves host cache settings.

Related ONTAP commands

- `vserver services name-service cache hosts settings show`

Learn more

- DOC /name-services/cache/host/settings

Parameters

Name	Type	In	Required	Description
dns_ttl_enabled	boolean	query	False	Filter by dns_ttl_enabled
negative_ttl	string	query	False	Filter by negative_ttl
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
ttl	string	query	False	Filter by ttl
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
uuid	string	query	False	Filter by uuid • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[hosts_settings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "dns_ttl_enabled": 1,
      "negative_ttl": "PT5M",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "ttl": "PT24H",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

hosts_settings

Hosts cache setting.

Name	Type	Description
_links	_links	
dns_ttl_enabled	boolean	Specifies whether TTL is based on the DNS or host settings. If enabled, TTL from DNS is used.
enabled	boolean	Indicates whether or not the cache is enabled.

Name	Type	Description
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.
uuid	string	UUID for the host record.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a host cache setting for an SVM

GET `/name-services/cache/host/settings/{uuid}`

Introduced In: 9.14

Retrieves a host cache setting for a given SVM.

Related ONTAP commands

- `vserver services name-service cache hosts settings show`

Learn more

- DOC /name-services/cache/host/settings

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID for the host record.
dns_ttl_enabled	boolean	query	False	Filter by dns_ttl_enabled
negative_ttl	string	query	False	Filter by negative_ttl
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
ttl	string	query	False	Filter by ttl
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
dns_ttl_enabled	boolean	Specifies whether TTL is based on the DNS or host settings. If enabled, TTL from DNS is used.
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.
uuid	string	UUID for the host record.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dns_ttl_enabled": 1,
  "negative_ttl": "PT5M",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT24H",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a host cache setting

PATCH `/name-services/cache/host/settings/{uuid}`

Introduced In: 9.14

Updates a host cache setting.

Important notes

- UUID field cannot be empty.
- Returns success in case no values are provided for update.

Related ONTAP commands

- `vserver services name-service cache hosts settings modify`

Learn more

- DOC /name-services/cache/host/settings

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID for the host record.

Request Body

Name	Type	Description
dns_ttl_enabled	boolean	Specifies whether TTL is based on the DNS or host settings. If enabled, TTL from DNS is used.
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

Name	Type	Description
uuid	string	UUID for the host record.

Example request

```
{
  "dns_ttl_enabled": 1,
  "negative_ttl": "PT5M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT24H",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

hosts_settings

Hosts cache setting.

Name	Type	Description
dns_ttl_enabled	boolean	Specifies whether TTL is based on the DNS or host settings. If enabled, TTL from DNS is used.
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.
uuid	string	UUID for the host record.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage netgroup cache settings

Name-services cache netgroup settings endpoint overview

Overview

This API is used to retrieve and manage netgroups cache settings.

Examples

Retrieving a netgroup cache setting

The following example shows how to use the cache netgroup settings GET endpoint to retrieve netgroup cache settings.

```
# The API:
GET /api/name-services/cache/netgroup/settings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-
services/cache/netgroup/settings?fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
      "name": "vs43"
    },
    "enabled": true,
    "negative_cache_enabled_byhost": true,
    "ttl_byhost": "P1D",
    "negative_ttl_byhost": "PT30M",
    "ttl_for_members": "PT30M"
  },
  {
    "svm": {
      "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
      "name": "vs34"
    },
    "enabled": true,
    "negative_cache_enabled_byhost": true,
    "ttl_byhost": "PT2H",
    "negative_ttl_byhost": "PT30M",
    "ttl_for_members": "PT30M"
  }
],
"num_records": 2
}
```

Retrieving a netgroup cache setting for a given SVM

The following example shows how to use the cache netgroup settings GET endpoint to retrieve netgroup cache settings for a given SVM.

```
# The API:
GET /api/name-services/cache/netgroup/settings/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-
services/cache/netgroup/settings/dc458b2f-2035-11ec-bfe2-005056bb6bef" -H
"accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
  "name": "vs34"
},
"enabled": true,
"negative_cache_enabled_byhost": true,
"ttl_byhost": "P1D",
"negative_ttl_byhost": "PT30M",
"ttl_for_members": "PT30M"
}
```

Updating a netgroup cache setting

The following example shows how to use the cache netgroup settings PATCH endpoint to update netgroup cache settings.

```
# The API:
PATCH /api/name-services/cache/netgroup/settings/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-
services/cache/netgroup/settings/02c9e252-41be-11e9-81d5-00a0986138f9" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"ttl_byhost\": \"PT2H\", \"negative_ttl_byhost\": \"PT2M\" }"
```

Retrieve netgroup cache settings

GET `/name-services/cache/netgroup/settings`

Introduced In: 9.11

Retrieves netgroups cache settings.

Related ONTAP commands

- `vserver services name-service cache netgroups settings show`

Learn more

- DOC /name-services/cache/netgroup/settings

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
ttl_for_members	string	query	False	Filter by ttl_for_members
negative_cache_enabled_byhost	boolean	query	False	Filter by negative_cache_enabled_byhost
ttl_byhost	string	query	False	Filter by ttl_byhost
negative_ttl_byhost	string	query	False	Filter by negative_ttl_byhost
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[netgroups_settings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "negative_ttl_byhost": "PT2M5S",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "ttl_byhost": "PT24H",
      "ttl_for_members": "PT2M"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

netgroups_settings

Netgroups cache setting.

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled_byhost	boolean	Indicates whether or not the negative cache is enabled.

Name	Type	Description
negative_ttl_byhost	string	Specifies negative Time to Live by host, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl_byhost	string	Specifies Time to Live by host, in ISO 8601 format.
ttl_for_members	string	Specifies Time to Live for netgroup members, in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a netgroup cache setting for an SVM

GET `/name-services/cache/netgroup/settings/{svm.uuid}`

Introduced In: 9.11

Retrieves a netgroup cache setting for a given SVM.

Related ONTAP commands

- `vserver services name-service cache netgroups settings show`

Learn more

- DOC /name-services/cache/netgroup/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
ttl_for_members	string	query	False	Filter by ttl_for_members
negative_cache_enabled_byhost	boolean	query	False	Filter by negative_cache_enabled_byhost
ttl_byhost	string	query	False	Filter by ttl_byhost
negative_ttl_byhost	string	query	False	Filter by negative_ttl_byhost
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled_byhost	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl_byhost	string	Specifies negative Time to Live by host, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl_byhost	string	Specifies Time to Live by host, in ISO 8601 format.

Name	Type	Description
ttl_for_members	string	Specifies Time to Live for netgroup members, in ISO 8601 format.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "negative_ttl_byhost": "PT2M5S",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl_byhost": "PT24H",
  "ttl_for_members": "PT2M"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a netgroup cache setting

PATCH `/name-services/cache/netgroup/settings/{svm.uuid}`

Introduced In: 9.11

Updates a netgroup cache setting.

Important notes

- svm.uuid field cannot be empty.
- Returns success in case no values are provided for update.

Related ONTAP commands

- `vserver services name-service cache netgroups settings modify`

Learn more

- DOC /name-services/cache/netgroup/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.

Request Body

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled_byhost	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl_byhost	string	Specifies negative Time to Live by host, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl_byhost	string	Specifies Time to Live by host, in ISO 8601 format.
ttl_for_members	string	Specifies Time to Live for netgroup members, in ISO 8601 format.

Example request

```
{
  "negative_ttl_byhost": "PT2M5S",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl_byhost": "PT24H",
  "ttl_for_members": "PT2M"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

netgroups_settings

Netgroups cache setting.

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled_byhost	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl_byhost	string	Specifies negative Time to Live by host, in ISO 8601 format.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl_byhost	string	Specifies Time to Live by host, in ISO 8601 format.
ttl_for_members	string	Specifies Time to Live for netgroup members, in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage global cache settings

Name-services cache setting endpoint overview

Overview

This API is used to retrieve and manage global nameservice cache settings.

Examples

Retrieving a global nameservice cache setting

The following example shows how to use the cache setting GET endpoint to retrieve the global nameservice cache setting.

```
# The API:
GET /api/name-services/cache/setting

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/setting" -H
"accept: application/hal+json"

# The response:
{
"eviction_time_interval": "P2D",
"remote_fetch_enabled": true
}
```

Updating a global nameservice cache setting

The following example shows how to use the cache setting PATCH endpoint to update the global nameservice cache setting.

```
# The API:
PATCH /api/name-services/cache/setting

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/cache/setting" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"eviction_time_interval\": \"PT2H\" }"
```

Retrieve a global name service cache setting

GET `/name-services/cache/setting`

Introduced In: 9.11

Retrieves a global nameservice cache setting.

Related ONTAP commands

- `vserver services name-service cache settings show`

Learn more

- DOC /name-services/cache/setting

Parameters

Name	Type	In	Required	Description
eviction_time_interval	string	query	False	Filter by eviction_time_interval
remote_fetch_enabled	boolean	query	False	Filter by remote_fetch_enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
eviction_time_interval	string	Specifies the time interval, in ISO 8601 format after which a periodic cache eviction happens. Default is 4 hours.
remote_fetch_enabled	boolean	Indicates whether or not a node is allowed to fetch the data from a remote node.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "eviction_time_interval": "PT2H"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a global name service cache setting

PATCH `/name-services/cache/setting`

Introduced In: 9.11

Updates a global nameservice cache setting.

Important notes

- Both the cache eviction time and remote fetch option can be modified.

Related ONTAP commands

- `vserver services name-service cache settings modify`

Learn more

- DOC /name-services/cache/setting

Request Body

Name	Type	Description
eviction_time_interval	string	Specifies the time interval, in ISO 8601 format after which a periodic cache eviction happens. Default is 4 hours.
remote_fetch_enabled	boolean	Indicates whether or not a node is allowed to fetch the data from a remote node.

Example request

```
{
  "eviction_time_interval": "PT2H"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

global_cache_setting

Name	Type	Description
eviction_time_interval	string	Specifies the time interval, in ISO 8601 format after which a periodic cache eviction happens. Default is 4 hours.
remote_fetch_enabled	boolean	Indicates whether or not a node is allowed to fetch the data from a remote node.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage UNIX group cache settings

Name-services cache unix-group settings endpoint overview

Overview

This API is used to retrieve and manage unix-group settings.

Examples

Retrieving unix-group settings

The following example shows how to use the cache unix-group settings GET endpoint to retrieve unix-group cache settings.

```
# The API:
GET /api/name-services/cache/unix-group/settings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/unix-
group/settings?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
      "name": "vs43"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "propagation_enabled": true
  },
  {
    "svm": {
      "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
      "name": "vs34"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "propagation_enabled": true
  }
],
"num_records": 2
}
```

Retrieving a unix-group setting for a given SVM

The following example shows how to use the cache unix-group settings GET endpoint to retrieve unix-group cache settings for a given SVM.

```
# The API:
GET /api/name-services/cache/unix-group/settings/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/unix-
group/settings/dc458b2f-2035-11ec-bfe2-005056bb6bef" -H "accept:
application/hal+json"

# The response:
{
"svm": {
  "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
  "name": "vs34"
},
"enabled": true,
"negative_cache_enabled": true,
"ttl": "P1D",
"negative_ttl": "PT1M",
"propagation_enabled": true
}
```

Updating a unix-group setting

The following example shows how to use the cache unix-group settings PATCH endpoint to update unix-group cache settings for an SVM.

```
# The API:
PATCH /api/name-services/cache/unix-group/settings/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/cache/unix-
group/settings/02c9e252-41be-11e9-81d5-00a0986138f9" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"ttl\":
\"PT2H\", \"negative_ttl\": \"PT2M\" }"
```

Retrieve UNIX group cache settings

GET `/name-services/cache/unix-group/settings`

Introduced In: 9.11

Retrieves unix-group cache settings.

Related ONTAP commands

- `vserver services name-service cache unix-group settings show`

Learn more

- DOC /name-services/cache/unix-group/settings

Parameters

Name	Type	In	Required	Description
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
negative_ttl	string	query	False	Filter by negative_ttl
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
propagation_enabled	boolean	query	False	Filter by propagation_enabled
enabled	boolean	query	False	Filter by enabled
ttl	string	query	False	Filter by ttl
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[unix_group_settings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "negative_ttl": "PT5M",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "ttl": "PT24H"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_group_settings

UNIX groups cache setting.

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.

Name	Type	Description
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a UNIX group cache setting for an SVM

GET `/name-services/cache/unix-group/settings/{svm.uuid}`

Introduced In: 9.11

Retrieves a unix-group cache setting for a given SVM.

Related ONTAP commands

- `vserver services name-service cache unix-group settings show`

Learn more

- DOC /name-services/cache/unix-group/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
negative_ttl	string	query	False	Filter by negative_ttl
svm.name	string	query	False	Filter by svm.name
propagation_enabled	boolean	query	False	Filter by propagation_enabled
enabled	boolean	query	False	Filter by enabled
ttl	string	query	False	Filter by ttl
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "negative_ttl": "PT5M",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT24H"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update UNIX group cache settings

PATCH `/name-services/cache/unix-group/settings/{svm.uuid}`

Introduced In: 9.11

Updates unix-group cache settings.

Important notes

- svm.uuid field cannot be empty.
- Returns success in case no values are provided for update.

Related ONTAP commands

- `vserver services name-service cache unix-group settings modify`

Learn more

- DOC /name-services/cache/unix-group/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.

Request Body

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

Example request

```
{
  "negative_ttl": "PT5M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT24H"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_group_settings

UNIX groups cache setting.

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage UNIX user cache settings

Name-services cache unix-user settings endpoint overview

Overview

This API is used to retrieve and manage unix-user settings.

Examples

Retrieving unix-user cache settings

The following example shows how to use the cache unix-user settings GET endpoint to retrieve unix-user cache settings.

```
# The API:
GET /api/name-services/cache/unix-user/settings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/unix-
user/settings?fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "8a1a8730-2036-11ec-8457-005056bbcfdb",
      "name": "vs43"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "propagation_enabled": true
  },
  {
    "svm": {
      "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
      "name": "vs34"
    },
    "enabled": true,
    "negative_cache_enabled": true,
    "ttl": "P1D",
    "negative_ttl": "PT1M",
    "propagation_enabled": true
  }
],
"num_records": 2
}
```

Retrieving a unix-user cache setting for a given SVM

The following example shows how to use the cache unix-user settings GET endpoint to retrieve unix-user cache settings for a given SVM.

```
# The API:
GET /api/name-services/cache/unix-user/settings/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/cache/unix-
user/settings/dc458b2f-2035-11ec-bfe2-005056bb6bef" -H "accept:
application/hal+json"

# The response:
{
"svm": {
  "uuid": "dc458b2f-2035-11ec-bfe2-005056bb6bef",
  "name": "vs34"
},
"enabled": true,
"negative_cache_enabled": true,
"ttl": "P1D",
"negative_ttl": "PT1M",
"propagation_enabled": true
}
```

Updating a unix-user setting

The following example shows how to use the cache unix-user settings PATCH endpoint to update unix-user cache settings.

```
# The API:
PATCH /api/name-services/cache/unix-user/settings/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/cache/unix-
user/settings/02c9e252-41be-11e9-81d5-00a0986138f9" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"ttl\":
\"PT2H\", \"negative_ttl\": \"PT2M\" }"
```

Retrieve UNIX user cache settings

GET `/name-services/cache/unix-user/settings`

Introduced In: 9.11

Retrieves unix-user cache settings.

Related ONTAP commands

- `vserver services name-service cache unix-user settings show`

Learn more

- DOC /name-services/cache/unix-user/settings

Parameters

Name	Type	In	Required	Description
ttl	string	query	False	Filter by ttl
propagation_enabled	boolean	query	False	Filter by propagation_enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
negative_ttl	string	query	False	Filter by negative_ttl
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[unix_user_settings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "negative_ttl": "PT5M",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "ttl": "PT2H"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_user_settings

UNIX users cache setting.

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.

Name	Type	Description
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve UNIX user cache settings for an SVM

GET `/name-services/cache/unix-user/settings/{svm.uuid}`

Introduced In: 9.11

Retrieves unix-user cache settings for a given SVM.

Related ONTAP commands

- `vserver services name-service cache unix-user settings show`

Learn more

- DOC /name-services/cache/unix-user/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.
ttl	string	query	False	Filter by ttl
propagation_enabled	boolean	query	False	Filter by propagation_enabled
svm.name	string	query	False	Filter by svm.name
enabled	boolean	query	False	Filter by enabled
negative_ttl	string	query	False	Filter by negative_ttl
negative_cache_enabled	boolean	query	False	Filter by negative_cache_enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "negative_ttl": "PT5M",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT2H"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a UNIX user cache setting

PATCH `/name-services/cache/unix-user/settings/{svm.uuid}`

Introduced In: 9.11

Updates a unix-user cache setting.

Important notes

- svm.uuid field cannot be empty.
- Returns success in case no values are provided for update.

Related ONTAP commands

- `vserver services name-service cache unix-user settings modify`

Learn more

- DOC /name-services/cache/unix-user/settings

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID.

Request Body

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

Example request

```
{
  "negative_ttl": "PT5M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ttl": "PT2H"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_user_settings

UNIX users cache setting.

Name	Type	Description
enabled	boolean	Indicates whether or not the cache is enabled.
negative_cache_enabled	boolean	Indicates whether or not the negative cache is enabled.
negative_ttl	string	Specifies negative Time to Live, in ISO 8601 format.
propagation_enabled	boolean	Specifies whether the propagation setting is enabled or not.
svm	svm	SVM, applies only to SVM-scoped objects.
ttl	string	Specifies Time to Live (TTL), in ISO 8601 format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage DNS configurations

Name-services dns endpoint overview

Overview

Displays DNS information and controls the DNS subsystem. DNS domain name and DNS servers are required parameters.

Retrieving DNS information

The DNS GET endpoint retrieves all of the DNS configurations for all SVMs.
DNS configuration for the cluster is retrieved via /api/cluster .

Examples

Retrieving all of the fields for all of the DNS configurations

```
# The API:
/api/name-services/dns

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns?fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
```

```
  {
    "svm": {
      "uuid": "27eff5d8-22b2-11eb-8038-0050568ed32c",
      "name": "clust-1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domains": [
      "domain.example.com"
    ],
    "servers": [
      "44.44.44.44"
    ],
    "timeout":2,
    "attempts":1,
    "scope": "cluster",
    "_links": {
      "self": {
        "href": "/api/name-services/dns/27eff5d8-22b2-11eb-8038-
0050568ed32c"
      }
    }
  },
  {
    "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domains": [
      "domainA.example.com"
    ],
    "servers": [
      "10.10.10.10"
    ],
    "timeout":2,
    "attempts":1,
    "dynamic_dns": {
```

```
      "enabled": false,
      "use_secure": false,
      "time_to_live": "PT1H"
    },
    "scope": "svm",
    "_links": {
      "self": {
        "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-
005056b41bd1"
      }
    }
  },
  {
    "uuid": "19076d35-6e27-11e8-b9b8-005056b41bd1",
    "svm": {
      "uuid": "19076d35-6e27-11e8-b9b8-005056b41bd1",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19076d35-6e27-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domains": [
      "sample.example.com"
    ],
    "servers": [
      "11.11.11.11",
      "22.22.22.22",
      "33.33.33.33"
    ],
    "timeout":2,
    "attempts":2,
    "dynamic_dns": {
      "enabled": true,
      "use_secure": false,
      "time_to_live": "PT3H"
    },
    "scope": "svm",
    "_links": {
      "self": {
        "href": "/api/name-services/dns/19076d35-6e27-11e8-b9b8-
005056b41bd1"
      }
    }
  }
```

```
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/name-services/dns?fields=*"
  }
}
}
```


Retrieving all DNS configurations whose domain name starts with *dom.**

```
# The API:
/api/name-services/dns

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns?domains=dom*" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domains": [
      "domainA.example.com"
    ],
    "_links": {
      "self": {
        "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/name-services/dns?domains=dom*"
  }
}
}
```

Retrieving the DNS configuration for a specific SVM

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json"

# The response:
{
"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"domains": [
  "domainA.example.com"
],
"servers": [
  "10.10.10.10"
],
"timeout":2,
"attempts":1,
"tld_query_enabled": true,
"source_address_match": true,
"packet_query_match": true,
"dynamic_dns": {
  "enabled": false,
  "use_secure": false,
  "time_to_live": "P1D"
},
"scope": "svm",
"_links": {
  "self": {
    "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-005056b41bd1"
  }
}
}
```

Retrieving the advanced fields "DNS status", "tld_query_enable", "source_address_match", and "packet_query_match" using wildcards **

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1?fileds=**" -H "accept: application/hal+json"

# The response:
{
"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"domains": [
  "domainA.example.com"
],
"servers": [
  "10.10.10.10"
],
"timeout":2,
"attempts":1,
"tld_query_enabled": true,
"source_address_match": true,
"packet_query_match": true,
"dynamic_dns": {
  "enabled": false,
  "use_secure": false,
  "time_to_live": "P1D"
},
"scope": "svm",
"status": [
  {
    "name_server": "10.10.10.10",
    "state": "up",
    "message": "Response time (msec): ",
    "code": 0
  }
```

```
],
"_links": {
  "self": {
    "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-005056b41bd1"
  }
}
}
```

Retrieving the "service_ips" for a specific DNS service name

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-
005056b41bd1?service.name=_kpasswd._udp.domainA.example.com&fields=**" -H
"accept: application/hal+json"

# The response:
{
"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
"domains": [
  "domainA.example.com"
],
"servers": [
  "10.10.10.10"
],
"timeout": 2,
"attempts": 1,
"tld_query_enabled": true,
"source_address_match": true,
"packet_query_match": true,
"dynamic_dns": {
  "enabled": false,
  "use_secure": false,
  "time_to_live": "P1D"
},
"scope": "svm",
"status": [
  {
    "name_server": "10.10.10.10",
    "state": "up",
    "message": "Response time (msec): 218",
    "code": 0
```

```
    }
  ],
  "svm": {
    "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
      }
    }
  },
  "service_ips": [
    "10.10.10.10",
    "2001:db08:a0b:12f0::1"
  ],
  "_links": {
    "self": {
      "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-
005056b41bd1?fields=**"
    }
  }
}
```

Retrieving the "service_ips" for a specific DNS service name with a particular address type (can be ipv4, ipv6 or all)

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-
005056b41bd1?service.name=_kpasswd._udp.domainA.example.com&service.addres
s_type=ipv4&fields=**" -H "accept: application/hal+json"

# The response:
{
"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
"domains": [
  "domainA.example.com"
],
"servers": [
  "10.10.10.10"
],
"timeout": 2,
```

```
"attempts": 1,
"tld_query_enabled": true,
"source_address_match": true,
"packet_query_match": true,
"dynamic_dns": {
  "enabled": false,
  "use_secure": false,
  "time_to_live": "P1D"
},
"scope": "svm",
"status": [
  {
    "name_server": "10.10.10.10",
    "state": "up",
    "message": "Response time (msec): 218",
    "code": 0
  }
],
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"service_ips": [
  "10.10.10.10"
],
"_links": {
  "self": {
    "href": "/api/name-services/dns/179d3c85-7053-11e8-b9b8-
005056b41bd1?fields=**"
  }
}
}
```


Creating a DNS configuration

The DNS POST endpoint creates a DNS configuration for the specified SVM.

Examples

Specifying only the required fields

```
# The API:
/api/name-services/dns

# The call:
    curl -X POST "https://<mgmt-ip>/api/name-services/dns" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"uuid\": \"179d3c85-7053-11e8-b9b8-005056b41bd1\" }, \"domains\": [
\"domainA.example.com\" ], \"servers\": [ \"10.10.10.10\" ]}"
```

Specifying the optional fields as well

```
# The API:
/api/name-services/dns

# The call:
    curl -X POST "https://<mgmt-ip>/api/name-services/dns" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"uuid\": \"179d3c85-7053-11e8-b9b8-005056b41bd1\" }, \"domains\": [
\"domainA.example.com\" ], \"servers\": [ \"10.10.10.10\" ],
\"timeout\":2, \"attempts\":3}"
```

Specifying the scope of the SVM

```
# The API:
/api/name-services/dns

# The call:
    curl -X POST "https://<mgmt-ip>/api/name-services/dns" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"uuid\": \"179d3c85-7053-11e8-b9b8-005056b41bd1\" }, \"domains\": [
\"domainA.example.com\" ], \"servers\": [ \"10.10.10.10\" ],
\"timeout\":2, \"attempts\":3, \"scope\":\"svm\"}"
```

Updating a DNS configuration

The DNS PATCH endpoint updates the DNS configuration for the specified SVM.

Examples

Updating both the DNS domains and servers

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "{ \"domains\": [ \"domainA.example.com\",
\"domainB.example.com\" ], \"servers\": [ \"10.10.10.10\", \"10.10.10.11\"
]}"
```

Updating the DNS servers only

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "{ \"servers\": [ \"10.10.10.10\" ]}"
```

Updating the optional fields "timeout", "attempts", and "source_address_match"

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "{ \"timeout\":2, \"attempts\":3,
\"source_address_match\":true}"
```

Updating the Dynamic DNS related fields

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "{ \"timeout\":2, \"attempts\":3,
\"dynamic_dns.enabled\":\"true\", \"dynamic_dns.time_to_live\":\"20h\"}"
```

Deleting a DNS configuration

The DNS DELETE endpoint deletes the DNS configuration for the specified SVM.

Example

The following example shows a DELETE operation.

```
# The API:
/api/name-services/dns/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/dns/179d3c85-7053-
11e8-b9b8-005056b41bd1" -H "accept: application/hal+json"
```

Retrieve DNS configurations for all SVMs

GET `/name-services/dns`

Introduced In: 9.6

Retrieves the DNS configurations of all SVMs.
Specify 'scope' as 'svm' to retrieve the DNS configuration of all the data SVMs.
Specify 'scope' as 'cluster' to retrieve the DNS configuration of the cluster.

Advanced properties

- 'tld_query_enabled'
- 'source_address_match'
- 'packet_query_match'
- 'status' property retrieves the status of each name server of the DNS configuration for an SVM.
- 'service_ips' property is displayed only when both service.name and SVM are set.

Related ONTAP commands

- `vserver services name-service dns show`
- `vserver services name-service dns check`
- `vserver services name-service dns dynamic-update show`
- `vserver services access-check dns srv-lookup`

Learn more

- DOC /name-services/dns

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid • Introduced in: 9.13
status.name_server	string	query	False	Filter by status.name_server • Introduced in: 9.9
status.code	integer	query	False	Filter by status.code • Introduced in: 9.9
status.state	string	query	False	Filter by status.state • Introduced in: 9.9
status.message	string	query	False	Filter by status.message • Introduced in: 9.9
service_ips	string	query	False	Filter by service_ips • Introduced in: 9.14
servers	string	query	False	Filter by servers
source_address_match	boolean	query	False	Filter by source_address_match • Introduced in: 9.9
tld_query_enabled	boolean	query	False	Filter by tld_query_enabled • Introduced in: 9.9
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
packet_query_match	boolean	query	False	Filter by packet_query_match • Introduced in: 9.9
attempts	integer	query	False	Filter by attempts • Introduced in: 9.9 • Max value: 4 • Min value: 1
domains	string	query	False	Filter by domains • maxLength: 255 • minLength: 1
timeout	integer	query	False	Filter by timeout • Introduced in: 9.9 • Max value: 5 • Min value: 1
dynamic_dns.time_to_live	string	query	False	Filter by dynamic_dns.time_to_live • Introduced in: 9.9
dynamic_dns.fqdn	string	query	False	Filter by dynamic_dns.fqdn • Introduced in: 9.9
dynamic_dns.use_secure	boolean	query	False	Filter by dynamic_dns.use_secure • Introduced in: 9.9

Name	Type	In	Required	Description
dynamic_dns.enabled	boolean	query	False	Filter by dynamic_dns.enabled • Introduced in: 9.9
scope	string	query	False	Filter by scope • Introduced in: 9.9
service.name	string	query	False	The string required to look up the SRV record on the DNS server. • Introduced in: 9.14
service.address_type	string	query	False	The type of IP address to be looked up on the DNS server. • Introduced in: 9.14 • Default value: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of DNS domain records.
records	array[dns]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "attempts": 1,
      "domains": [
        "example.com",
        "example2.example3.com"
      ],
      "dynamic_dns": {
        "fqdn": "example.com",
        "time_to_live": "P2D"
      },
      "scope": "string",
      "servers": [
        "10.224.65.20",
        "2001:db08:a0b:12f0::1"
      ],
      "service_ips": [
        "10.224.65.20",
        "2001:db08:a0b:12f0::1"
      ],
      "skip_config_validation": true,
      "status": [
        {
          "code": 6684732,
          "message": "string",
          "name_server": "10.10.10.10",
          "state": "up"
        }
      ],
```

```
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "timeout": 2,
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

dynamic_dns

Name	Type	Description
enabled	boolean	Enable or disable Dynamic DNS (DDNS) updates for the specified SVM.
fqdn	string	Fully Qualified Domain Name (FQDN) to be used for dynamic DNS updates.
skip_fqdn_validation	boolean	Enable or disable FQDN validation.
time_to_live	string	Time to live value for the dynamic DNS updates, in an ISO-8601 duration formatted string. Maximum Time To Live is 720 hours(P30D in ISO-8601 format) and the default is 24 hours(P1D in ISO-8601 format).
use_secure	boolean	Enable or disable secure dynamic DNS updates for the specified SVM.

status

Status of each of the DNS name server configured for the specified SVM.

Name	Type	Description
code	integer	Code corresponding to the status message. Code is 0 when the state is 'up'.
message	string	Detailed description of the validation state if the state is 'down' or the response time of the DNS server if the state is 'up'.
name_server	string	The IP address of the DNS server. The address can be either an IPv4 or an IPv6 address.
state	string	The validation status of the DNS server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

dns

Name	Type	Description
_links	_links	
attempts	integer	Number of attempts allowed when querying the DNS name servers.

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
dynamic_dns	dynamic_dns	
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
scope	string	Set to "svm" for DNS owned by an SVM, otherwise set to "cluster".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.

Name	Type	Description
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create DNS domain and server configurations

POST `/name-services/dns`

Introduced In: 9.6

Creates DNS domain and server configurations for an SVM.

Important notes

- Each SVM can have only one DNS configuration.
- The domain name and the servers fields cannot be empty.
- IPv6 must be enabled if IPv6 family addresses are specified in the `servers` field.
- Configuring more than one DNS server is recommended to avoid a single point of failure.
- The DNS server specified using the `servers` field is validated during this operation.

The validation fails in the following scenarios:

1. The server is not a DNS server.
2. The server does not exist.
3. The server is unreachable.
    - The DNS server validation can be skipped by setting the property "skip_config_validation" to "true".
    - Scope of the SVM can be specified using the "scope" parameter. "svm" scope refers to data SVMs and "cluster" scope refers to clusters.

The following parameters are optional:

- timeout
- attempts
- source_address_match
- packet_query_match
- tld_query_enabled
- skip_config_validation
- scope

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
attempts	integer	Number of attempts allowed when querying the DNS name servers.
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
scope	string	Set to "svm" for DNS owned by an SVM, otherwise set to "cluster".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.

Name	Type	Description
skip_config_validation	boolean	Indicates whether or not the validation for the specified DNS configuration is disabled.
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

Example request

```
{
  "attempts": 1,
  "domains": [
    "example.com",
    "example2.example3.com"
  ],
  "scope": "string",
  "servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "service_ips": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "status": [
    {
      "code": 6684732,
      "message": "string",
      "name_server": "10.10.10.10",
      "state": "up"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timeout": 2,
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of DNS domain records.
records	array[dns]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "attempts": 1,
      "domains": [
        "example.com",
        "example2.example3.com"
      ],
      "scope": "string",
      "servers": [
        "10.224.65.20",
        "2001:db08:a0b:12f0::1"
      ],
      "service_ips": [
        "10.224.65.20",
        "2001:db08:a0b:12f0::1"
      ],
      "status": [
        {
          "code": 6684732,
          "message": "string",
          "name_server": "10.10.10.10",
          "state": "up"
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "timeout": 2,
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621706	The specified SVM UUID is incorrect for the specified SVM name
8847360	Only admin or data SVMs allowed
8847361	Exceeded the maximum number of domains allowed. Maximum of six domains only
8847362	Exceeded the maximum number of name servers allowed. Maximum of three name servers only
8847392	Domain name cannot be an IP address
8847393	Top level domain name is invalid
8847399	One or more of the specified DNS servers do not exist or cannot be reached
8847394	FQDN name violated the limitations
8847403	Scope specified is invalid for the specified SVM
9240587	FQDN name cannot be empty
9240588	FQDN name is too long. Maximum supported length: 255 characters
9240590	FQDN name is reserved. Following names are reserved: "all", "local" and "localhost"
9240607	One of the FQDN labels is too long. Maximum supported length is 63 characters
13434916	The SVM is in the process of being created. Wait a few minutes, and then try the command again.
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs
1377682	IPv6 is not enabled in the cluster
8847407	The connection is refused for one or more of the specified DNS servers.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dynamic_dns

Name	Type	Description
enabled	boolean	Enable or disable Dynamic DNS (DDNS) updates for the specified SVM.
fqdn	string	Fully Qualified Domain Name (FQDN) to be used for dynamic DNS updates.
skip_fqdn_validation	boolean	Enable or disable FQDN validation.
time_to_live	string	Time to live value for the dynamic DNS updates, in an ISO-8601 duration formatted string. Maximum Time To Live is 720 hours(P30D in ISO-8601 format) and the default is 24 hours(P1D in ISO-8601 format).
use_secure	boolean	Enable or disable secure dynamic DNS updates for the specified SVM.

status

Status of each of the DNS name server configured for the specified SVM.

Name	Type	Description
code	integer	Code corresponding to the status message. Code is 0 when the state is 'up'.

Name	Type	Description
message	string	Detailed description of the validation state if the state is 'down' or the response time of the DNS server if the state is 'up'.
name_server	string	The IP address of the DNS server. The address can be either an IPv4 or an IPv6 address.
state	string	The validation status of the DNS server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

dns

Name	Type	Description
attempts	integer	Number of attempts allowed when querying the DNS name servers.

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
scope	string	Set to "svm" for DNS owned by an SVM, otherwise set to "cluster".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.

Name	Type	Description
skip_config_validation	boolean	Indicates whether or not the validation for the specified DNS configuration is disabled.
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the DNS domain configuration for an SVM

DELETE `/name-services/dns/{uuid}`

Introduced In: 9.13

Deletes DNS domain configuration of the specified SVM.

Related ONTAP commands

- `vserver services name-service dns delete`

Learn more

- DOC /name-services/dns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the DNS domain and server configuration for an SVM

GET `/name-services/dns/{uuid}`

Introduced In: 9.13

Retrieves DNS domain and server configuration of an SVM. By default, both DNS domains and servers are displayed.

Advanced properties

- 'tld_query_enabled'
- 'source_address_match'
- 'packet_query_match'
- 'status' property retrieves the status of each name server of the DNS configuration for an SVM.
- 'service_ips' property is displayed only when both service.name and SVM are set.

Related ONTAP commands

- `vserver services name-service dns show`
- `vserver services name-service dns check`
- `vserver services name-service dns dynamic-update show`
- `vserver services access-check dns srv-lookup`

Learn more

- DOC /name-services/dns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the DNS object.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
attempts	integer	Number of attempts allowed when querying the DNS name servers.

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
dynamic_dns	dynamic_dns	
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
scope	string	Set to "svm" for DNS owned by an SVM, otherwise set to "cluster".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.

Name	Type	Description
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "attempts": 1,
  "domains": [
    "example.com",
    "example2.example3.com"
  ],
  "dynamic_dns": {
    "fqdn": "example.com",
    "time_to_live": "P2D"
  },
  "scope": "string",
  "servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "service_ips": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "skip_config_validation": true,
  "status": [
    {
      "code": 6684732,
      "message": "string",
      "name_server": "10.10.10.10",
      "state": "up"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timeout": 2,
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

dynamic_dns

Name	Type	Description
enabled	boolean	Enable or disable Dynamic DNS (DDNS) updates for the specified SVM.
fqdn	string	Fully Qualified Domain Name (FQDN) to be used for dynamic DNS updates.
skip_fqdn_validation	boolean	Enable or disable FQDN validation.
time_to_live	string	Time to live value for the dynamic DNS updates, in an ISO-8601 duration formatted string. Maximum Time To Live is 720 hours(P30D in ISO-8601 format) and the default is 24 hours(P1D in ISO-8601 format).
use_secure	boolean	Enable or disable secure dynamic DNS updates for the specified SVM.

status

Status of each of the DNS name server configured for the specified SVM.

Name	Type	Description
code	integer	Code corresponding to the status message. Code is 0 when the state is 'up'.

Name	Type	Description
message	string	Detailed description of the validation state if the state is 'down' or the response time of the DNS server if the state is 'up'.
name_server	string	The IP address of the DNS server. The address can be either an IPv4 or an IPv6 address.
state	string	The validation status of the DNS server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Update the DNS domain and server configuration for an SVM

PATCH `/name-services/dns/{uuid}`

Introduced In: 9.13

Updates DNS domain and server configurations of an SVM.

Important notes

- Both DNS domains and servers can be modified.
- The domains and servers fields cannot be empty.
- IPv6 must be enabled if IPv6 family addresses are specified for the `servers` field.
- The DNS server specified using the `servers` field is validated during this operation.

The validation fails in the following scenarios:

1. The server is not a DNS server.
2. The server does not exist.
3. The server is unreachable.
    - The DNS server validation can be skipped by setting the property "skip_config_validation" to "true".
    - Dynamic DNS configuration can be modified.
    - If both DNS and Dynamic DNS parameters are modified, DNS parameters are updated first followed by Dynamic DNS parameters.
      If updating Dynamic DNS fails, then the updated DNS configuration is not reverted.

The following parameters are optional:

- timeout
- attempts
- source_address_match
- packet_query_match
- tld_query_enabled
- skip_config_validation
- dynamic_dns.enabled
- dynamic_dns.use_secure
- dynamic_dns.time_to_live

Related ONTAP commands

- `vserver services name-service dns modify`
- `vserver services name-service dns dynamic-update modify`

Learn more

- DOC /name-services/dns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the DNS object.

Request Body

Name	Type	Description
attempts	integer	Number of attempts allowed when querying the DNS name servers.

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
dynamic_dns	dynamic_dns	
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.
skip_config_validation	boolean	Indicates whether or not the validation for the specified DNS configuration is disabled.

Name	Type	Description
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

Example request

```
{
  "attempts": 1,
  "domains": [
    "example.com",
    "example2.example3.com"
  ],
  "dynamic_dns": {
    "fqdn": "example.com",
    "time_to_live": "P2D"
  },
  "servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "service_ips": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
  ],
  "status": [
    {
      "code": 6684732,
      "message": "string",
      "name_server": "10.10.10.10",
      "state": "up"
    }
  ],
  "timeout": 2,
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8847360	Only admin or data SVMs allowed
8847361	Exceeded the maximum number of domains allowed. Maximum of six domains only
8847362	Exceeded the maximum number of name servers allowed. Maximum of three name servers only
8847376	FQDN is mandatory if dynamic DNS update is being enabled.
8847380	Secure updates can be enabled only after a CIFS server or an Active Directory account has been created for the SVM.
8847381	A unique FQDN must be specified for each SVM.
8847383	The specified TTL exceeds the maximum supported value of 720 hours.
8847392	Domain name cannot be an IP address
8847393	Top level domain name is invalid
8847394	FQDN name violated the limitations
8847399	One or more of the specified DNS servers do not exist or cannot be reached
8847404	Dynamic DNS is applicable only for data SVMs
8847405	DNS parameters updated successfully; however the update of Dynamic DNS-related parameters has failed.
9240587	FQDN name cannot be empty
9240588	FQDN name is too long. Maximum supported length: 255 characters
9240590	FQDN name is reserved. Following names are reserved: "all", "local" and "localhost"
9240607	One of the FQDN labels is too long. Maximum supported length is 63 characters
9240608	FQDN does not contain a ".". At least one "." is mandatory for an FQDN.
9240607	A label of the FQDN is too long (73 characters). Maximum supported length for each label is 63 characters.
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

dynamic_dns

Name	Type	Description
enabled	boolean	Enable or disable Dynamic DNS (DDNS) updates for the specified SVM.
fqdn	string	Fully Qualified Domain Name (FQDN) to be used for dynamic DNS updates.
skip_fqdn_validation	boolean	Enable or disable FQDN validation.
time_to_live	string	Time to live value for the dynamic DNS updates, in an ISO-8601 duration formatted string. Maximum Time To Live is 720 hours(P30D in ISO-8601 format) and the default is 24 hours(P1D in ISO-8601 format).
use_secure	boolean	Enable or disable secure dynamic DNS updates for the specified SVM.

status

Status of each of the DNS name server configured for the specified SVM.

Name	Type	Description
code	integer	Code corresponding to the status message. Code is 0 when the state is 'up'.

Name	Type	Description
message	string	Detailed description of the validation state if the state is 'down' or the response time of the DNS server if the state is 'up'.
name_server	string	The IP address of the DNS server. The address can be either an IPv4 or an IPv6 address.
state	string	The validation status of the DNS server.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

dns

Name	Type	Description
attempts	integer	Number of attempts allowed when querying the DNS name servers.

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
dynamic_dns	dynamic_dns	
packet_query_match	boolean	Indicates whether or not the query section of the reply packet is equal to that of the query packet.
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
service_ips	array[string]	List of IP addresses for a DNS service. Addresses can be IPv4, IPv6 or both.
skip_config_validation	boolean	Indicates whether or not the validation for the specified DNS configuration is disabled.

Name	Type	Description
source_address_match	boolean	Indicates whether or not the DNS responses are from a different IP address to the IP address the request was sent to.
status	array[status]	Status of all the DNS name servers configured for the specified SVM.
timeout	integer	Timeout values for queries to the name servers, in seconds.
tld_query_enabled	boolean	Enable or disable top-level domain (TLD) queries.
uuid	string	UUID of the DNS object.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View host records

Name-services host-record svm.uuid host endpoint overview

Overview

Displays the IP address of the specified hostname and vice-versa.

Retrieving the host table entries

The host-record GET endpoint to retrieve the hostname for a given Ip address and vice-versa.

Examples

Retrieving the hostname for a given IP address.

```
# The API:
GET /api/name-services/host-record/{svm.uuid}/{host}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/host-record/77e23bd4-
a8fe-11eb-99e0-0050568e14ff/127.0.0.1" -H "accept: application/json"

# The response:
 {
"svm": {
  "uuid": "77e23bd4-a8fe-11eb-99e0-0050568e14ff",
  "name": "svm1"
 },
"host": "127.0.0.1",
"ipv4_addresses": [
  "127.0.0.1"
 ],
"hostname": "localhost",
"source": "Files"
 }
```

Retrieving the Ip address for a given hostname.

```
# The API:
GET /api/name-services/host-record/{svm.uuid}/{host}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/host-record/77e23bd4-
a8fe-11eb-99e0-0050568e14ff/localhost" -H "accept: application/json"

# The response:
 {
"svm": {
  "uuid": "77e23bd4-a8fe-11eb-99e0-0050568e14ff",
  "name": "svm1"
},
"host": "localhost",
"ipv4_addresses": [
  "127.0.0.1"
],
"ipv6_addresses": [
  "::1"
],
"hostname": "localhost",
"canonical_name": "localhost",
"source": "Files"
 }
```

Retrieve an IP address of a hostname

GET `/name-services/host-record/{svm.uuid}/{host}`

Introduced In: 9.10

Retrieves the IP address of the specified hostname and vice-versa.

Related ONTAP commands

- `vserver services name-service getxxbyyy getnameinfo`
- `vserver services name-service getxxbyyy getaddrinfo`

Parameters

Name	Type	In	Required	Description
host	string	path	True	Hostname or IP address.

Name	Type	In	Required	Description
use_cache	boolean	query	False	Enables or disables the cache. • Introduced in: 9.11 • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
canonical_name	string	Canonical name of the host.
host	string	IP address or hostname.
hostname	string	Hostname.
ipv4_addresses	array[string]	List of IPv4 addresses.
ipv6_addresses	array[string]	List of IPv6 addresses.
source	string	Source used for lookup.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "canonical_name": "localhost",
  "host": "localhost",
  "hostname": "localhost",
  "ipv4_addresses": [
    "127.0.0.1"
  ],
  "ipv6_addresses": [
    ":1"
  ],
  "source": "Files",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8912900	Invalid IP address.
23724050	Failed to resolve the specified hostname or IP address.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage LDAP server configurations

Name-services LDAP endpoint overview

Overview

LDAP servers are used to centrally maintain user information. LDAP configurations must be set up to lookup information stored in the LDAP directory on the external LDAP servers. This API is used to retrieve and manage
LDAP server configurations.

Retrieving LDAP information

The LDAP GET endpoint retrieves all of the LDAP configurations in the cluster.

Examples

Retrieving all of the fields for all LDAP configurations

```
# The API:
/api/name-services/ldap

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap?fields=**" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "servers": [
      "10.10.10.10",
      "domainB.example.com"
    ],
    "schema": "ad_idmu",
    "port": 389,
    "ldaps_enabled": false,
    "min_bind_level": "anonymous",
```

```
    "bind_dn": "cn=Administrators,cn=users,dc=domainA,dc=example,dc=com",
    "base_dn": "dc=domainA,dc=example,dc=com",
    "base_scope": "subtree",
    "use_start_tls": true,
    "session_security": "none",
    "referral_enabled": false,
    "bind_as_cifs_server": false,
    "query_timeout": 3,
    "is_owner": true,
    "user_scope": "subtree",
    "group_scope": "subtree",
    "netgroup_scope": "subtree",
    "is_netgroup_byhost_enabled": false,
    "netgroup_byhost_scope": "subtree",
    "group_membership_filter": "",
    "status": {
      "state": "down",
      "message": "The LDAP configuration is invalid. Verify that the AD
domain or servers are reachable and that the network configuration is
correct",
      "dn_message": [
        "No LDAP DN configured"
      ],
      "code": 4915258,
      "ipv4_state": "down",
      "ipv6_state": "down"
    },
    "try_channel_binding": true,
    "restrict_discovery_to_site" : false,
    "_links": {
      "self": {
        "href": "/api/name-services/ldap/179d3c85-7053-11e8-b9b8-
005056b41bd1"
      }
    }
  },
  {
    "svm": {
      "uuid": "6a52023b-7066-11e8-b9b8-005056b41bd1",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6a52023b-7066-11e8-b9b8-005056b41bd1"
        }
      }
    },
```

```
    "ad_domain": "example.com",
    "schema": "rfc_2307",
    "port": 389,
    "ldaps_enabled": false,
    "min_bind_level": "simple",
    "bind_dn": "cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
    "base_dn": "dc=domainB,dc=example,dc=com",
    "base_scope": "subtree",
    "use_start_tls": true,
    "session_security": "sign",
    "referral_enabled": false,
    "bind_as_cifs_server": false,
    "query_timeout": 0,
    "is_owner": true,
    "user_scope": "subtree",
    "group_scope": "subtree",
    "netgroup_scope": "subtree",
    "is_netgroup_byhost_enabled": false,
    "netgroup_byhost_scope": "subtree",
    "group_membership_filter": "",
    "status": {
      "state": "up",
      "message": "Successfully connected to LDAP server \"172.20.192.44\".
Successfully connected to LDAP server
\"fd20:8b1e:b255:5056:999:d9:516c:bf69\".",
      "dn_message": [
        "All the configured DNs are available."
      ],
      "code": 0,
      "ipv4_state": "up",
      "ipv6_state": "up"
    },
    "try_channel_binding": true,
    "restrict_discovery_to_site": true,
    "_links": {
      "self": {
        "href": "/api/name-services/ldap/6a52023b-7066-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/name-services/ldap?fields=*"
```

```
    }
  }
  }
```

Retrieving all of the LDAP configurations that have the *use_start_tls* set to *true*

```
# The API:
/api/name-services/ldap

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap?use_start_tls=true"
-H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "6a52023b-7066-11e8-b9b8-005056b41bd1",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6a52023b-7066-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "use_start_tls": true,
    "_links": {
      "self": {
        "href": "/api/name-services/ldap/6a52023b-7066-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/name-services/ldap?use_start_tls=true"
  }
}
}
```

Retrieving the LDAP configuration of a specific SVM

```
# The API:
/api/name-services/ldap/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"servers": [
  "10.10.10.10",
  "domainB.example.com"
],
"schema": "ad_idmu",
"port": 389,
"ldaps_enabled": false,
"min_bind_level": "anonymous",
"bind_dn": "cn=Administrators,cn=users,dc=domainA,dc=example,dc=com",
"base_dn": "dc=domainA,dc=example,dc=com",
"base_scope": "subtree",
"use_start_tls": true,
"referral_enabled": false,
"session_security": "none",
"bind_as_cifs_server": true,
"query_timeout": 3,
"is_owner": true,
"try_channel_binding": true,
"restrict_discovery_to_site": false,
"_links": {
  "self": {
    "href": "/api/name-services/ldap/179d3c85-7053-11e8-b9b8-005056b41bd1"
  }
}
}
```

Retrieving all the fields of the LDAP configuration of a specific SVM

```
# The API:
/api/name-services/ldap/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap/179d3c85-7053-11e8-
b9b8-005056b41bd1?fields=**" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
    }
  }
},
"servers": [
  "10.10.10.10",
  "domainB.example.com"
],
"schema": "ad_idmu",
"port": 389,
"ldaps_enabled": false,
"min_bind_level": "anonymous",
"bind_dn": "cn=Administrators,cn=users,dc=domainA,dc=example,dc=com",
"base_dn": "dc=domainA,dc=example,dc=com",
"base_scope": "subtree",
"use_start_tls": true,
"referral_enabled": false,
"session_security": "none",
"bind_as_cifs_server": true,
"query_timeout": 3,
"is_owner": true,
"user_scope": "subtree",
"group_scope": "subtree",
"netgroup_scope": "subtree",
"is_netgroup_byhost_enabled": false,
"netgroup_byhost_scope": "subtree",
"group_membership_filter": "",
"try_channel_binding": true,
```

```
"restrict_discovery_to_site": false,
"status": {
  "state": "down",
  "message": "The LDAP configuration is invalid. Verify that the AD domain
or servers are reachable and that the network configuration is correct",
  "dn_message": [
    "No LDAP DN configured"
  ],
  "code": 4915258,
  "ipv4_state": "down",
  "ipv6_state": "down"
},
"_links": {
  "self": {
    "href": "/api/name-services/ldap/179d3c85-7053-11e8-b9b8-005056b41bd1"
  }
}
}
```


Retrieving the LDAP server status of a specific SVM

```
# The API:
/api/name-services/ldap/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap/9e4a2e3b-f66f-11ea-
aec8-0050568e155c?fields=status" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "9e4a2e3b-f66f-11ea-aec8-0050568e155c",
  "name": "vs2"
},
"status": {
  "state": "up",
  "message": "Successfully connected to LDAP server \"172.20.192.44\".
Successfully connected to LDAP server
\"fd20:8b1e:b255:5056:999:d9:516c:bf69\".",
  "code": 0,
  "ipv4_state": "up",
  "ipv6_state": "up"
}
}
```

Retrieving all of the LDAP configurations that have the *restrict_discovery_to_site* set to *true*

```
# The API:
/api/name-services/ldap

# The call:
curl -X GET "https://<mgmt-ip>/api/name-
services/ldap?restrict_discovery_to_site=true" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "6a52023b-7066-11e8-b9b8-005056b41bd1",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6a52023b-7066-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "restrict_discovery_to_site": true,
    "_links": {
      "self": {
        "href": "/api/name-services/ldap/6a52023b-7066-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/name-services/ldap?restrict_discovery_to_site=true"
  }
}
}
```

Creating an LDAP configuration

The LDAP POST endpoint creates an LDAP configuration for the specified SVM.

Examples

Creating an LDAP configuration with all the fields specified

```
# The API:
/api/name-services/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/ldap" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"uuid\": \"179d3c85-7053-11e8-b9b8-005056b41bd1\" }, \"servers\": [
\"10.10.10.10\", \"domainB.example.com\" ], \"schema\": \"ad_idmu\",
\"port\": 389, \"ldaps_enabled\": false, \"min_bind_level\":
\"anonymous\", \"bind_dn\":
\"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"base_scope\": \"subtree\", \"use_start_tls\": false,
\"session_security\": \"none\", \"referral_enabled\": false,
\"bind_as_cifs_server\": false, \"query_timeout\": 4, \"user_dn\":
\"cn=abc,users,dc=com\", \"user_scope\": \"subtree\", \"group_dn\":
\"cn=abc,users,dc=com\", \"group_scope\": \"subtree\", \"netgroup_dn\":
\"cn=abc,users,dc=com\", \"netgroup_scope\": \"subtree\",
\"netgroup_byhost_dn\": \"cn=abc,users,dc=com\",
\"netgroup_byhost_scope\": \"subtree\", \"is_netgroup_byhost_enabled\":
false, \"group_membership_filter\": \"\", \"skip_config_validation\":
false } "
```

Creating an LDAP configuration with Active Directory domain and preferred Active Directory servers specified

```
# The API:
/api/name-services/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/ldap" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"name\": \"vs2\" }, \"ad_domain\": \"domainA.example.com\",
\"preferred_ad_servers\": [ \"11.11.11.11\" ], \"port\": 389,
\"ldaps_enabled\": false, \"bind_dn\":
\"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"session_security\": \"none\", \"referral_enabled\": false,
\"query_timeout\": 3}"
```

Creating an LDAP configuration with a number of optional fields not specified

```
# The API:
/api/name-services/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/ldap" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"name\": \"vs2\" }, \"servers\": [ \"11.11.11.11\" ], \"port\": 389,
\"bind_dn\": \"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"session_security\": \"none\"}"
```

Creating an LDAP configuration with Active Directory domain specified and *restrict_discovery_to_site* set to *true*

```
# The API:
/api/name-services/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/ldap" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"name\": \"vs2\" }, \"ad_domain\": \"example.com\", \"port\": 389,
\"bind_dn\": \"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"session_security\": \"none\", \"restrict_discovery_to_site\": true}"
```

Updating an LDAP configuration

The LDAP PATCH endpoint updates the LDAP configuration for the specified SVM. The following example shows a PATCH operation:

```
# The API:
/api/name-services/ldap/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/ldap/179d3c85-7053-
11e8-b9b8-005056b41bd1" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"servers\": [ \"55.55.55.55\" ], \"schema\":
\"ad_idmu\", \"port\": 636, \"ldaps_enabled\": true, \"use_start_tls\":
false, \"referral_enabled\": false ,\"restrict_discovery_to_site\":
false}"
```

Deleting an LDAP configuration

The LDAP DELETE endpoint deletes the LDAP configuration for the specified SVM. The following example shows a DELETE operation:

```
# The API:
/api/name-services/ldap/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/ldap/179d3c85-7053-
11e8-b9b8-005056b41bd1" -H "accept: application/hal+json"
```

Retrieve the LDAP configuration for all SVMs

GET `/name-services/ldap`

Introduced In: 9.6

Retrieves the LDAP configurations for all SVMs.

Related ONTAP commands

- `ldap show`
- `ldap check -vserver vs0`
- `ldap check-ipv6 -vserver vs0`

Important notes

- The status.code, status.dn_message, status.message, and status.state fields have the same status fields that are returned using the "ldap check" CLI command.
- Refer to the ipv4 or ipv6 objects available in the status field to get specific information about the code, dn_messages, or message and state information for ipv4 or ipv6.

Parameters

Name	Type	In	Required	Description
bind_as_cifs_server	boolean	query	False	Filter by bind_as_cifs_server • Introduced in: 9.9
netgroup_byhost_scope	string	query	False	Filter by netgroup_byhost_scope • Introduced in: 9.9
user_scope	string	query	False	Filter by user_scope • Introduced in: 9.9
group_dn	string	query	False	Filter by group_dn • Introduced in: 9.9

Name	Type	In	Required	Description
group_membership_filter	string	query	False	Filter by group_membership_filter • Introduced in: 9.9
min_bind_level	string	query	False	Filter by min_bind_level • Introduced in: 9.7
base_dn	string	query	False	Filter by base_dn • Introduced in: 9.7
preferred_ad_servers	string	query	False	Filter by preferred_ad_servers • Introduced in: 9.7
restrict_discovery_to_site	boolean	query	False	Filter by restrict_discovery_to_site • Introduced in: 9.13
status.dn_message	string	query	False	Filter by status.dn_message • Introduced in: 9.9
status.ipv4_state	string	query	False	Filter by status.ipv4_state • Introduced in: 9.13
status.ipv6.code	integer	query	False	Filter by status.ipv6.code • Introduced in: 9.14

Name	Type	In	Required	Description
status.ipv6.message	string	query	False	Filter by status.ipv6.message • Introduced in: 9.14
status.ipv6.state	string	query	False	Filter by status.ipv6.state • Introduced in: 9.14
status.ipv6.dn_messages	string	query	False	Filter by status.ipv6.dn_messages • Introduced in: 9.14
status.ipv4.code	integer	query	False	Filter by status.ipv4.code • Introduced in: 9.14
status.ipv4.message	string	query	False	Filter by status.ipv4.message • Introduced in: 9.14
status.ipv4.state	string	query	False	Filter by status.ipv4.state • Introduced in: 9.14
status.ipv4.dn_messages	string	query	False	Filter by status.ipv4.dn_messages • Introduced in: 9.14
status.ipv6_state	string	query	False	Filter by status.ipv6_state • Introduced in: 9.13

Name	Type	In	Required	Description
status.code	integer	query	False	Filter by status.code • Introduced in: 9.9
status.state	string	query	False	Filter by status.state • Introduced in: 9.9
status.message	string	query	False	Filter by status.message • Introduced in: 9.9
netgroup_scope	string	query	False	Filter by netgroup_scope • Introduced in: 9.9
base_scope	string	query	False	Filter by base_scope • Introduced in: 9.7
schema	string	query	False	Filter by schema • Introduced in: 9.7
netgroup_byhost_dn	string	query	False	Filter by netgroup_byhost_dn • Introduced in: 9.9
is_owner	boolean	query	False	Filter by is_owner • Introduced in: 9.9
user_dn	string	query	False	Filter by user_dn • Introduced in: 9.9

Name	Type	In	Required	Description
ldaps_enabled	boolean	query	False	Filter by ldaps_enabled • Introduced in: 9.9
referral_enabled	boolean	query	False	Filter by referral_enabled • Introduced in: 9.9
use_start_tls	boolean	query	False	Filter by use_start_tls • Introduced in: 9.7
netgroup_dn	string	query	False	Filter by netgroup_dn • Introduced in: 9.9
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.7
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.7
group_scope	string	query	False	Filter by group_scope • Introduced in: 9.9
ad_domain	string	query	False	Filter by ad_domain • Introduced in: 9.7
servers	string	query	False	Filter by servers • Introduced in: 9.7

Name	Type	In	Required	Description
port	integer	query	False	Filter by port • Introduced in: 9.7 • Max value: 65535 • Min value: 1
query_timeout	integer	query	False	Filter by query_timeout • Introduced in: 9.9
is_netgroup_byhost_enabled	boolean	query	False	Filter by is_netgroup_byhost_enabled • Introduced in: 9.9
bind_dn	string	query	False	Filter by bind_dn • Introduced in: 9.7
try_channel_binding	boolean	query	False	Filter by try_channel_binding • Introduced in: 9.10
session_security	string	query	False	Filter by session_security • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of LDAP records.
records	array[ldap_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ad_domain": "example.com",
      "base_dn": "dc=domainB,dc=example,dc=com",
      "base_scope": "string",
      "bind_dn":
"cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
      "group_dn": "cn=abc,users,dc=com",
      "group_membership_filter": "",
      "group_scope": "string",
      "min_bind_level": "string",
      "netgroup_byhost_dn": "cn=abc,users,dc=com",
      "netgroup_byhost_scope": "string",
      "netgroup_dn": "cn=abc,users,dc=com",
      "netgroup_scope": "string",
      "port": 389,
      "preferred_ad_servers": [
        "11.11.11.11"
      ],
      "schema": "ad_idmu",
      "servers": [
        [
          "10.10.10.10",
          "domainB.example.com"
        ]
      ],
      "session_security": "string",
      "skip_config_validation": true,
      "status": {
```

```
        "code": 65537300,
        "dn_message": [
          "string"
        ],
        "ipv4": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv4_state": "string",
        "ipv6": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv6_state": "string",
        "message": "string",
        "state": "string"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "user_dn": "cn=abc,users,dc=com",
      "user_scope": "string"
    }
  ]
}
```


Error

```
Status: Default
```

Following error codes can be thrown as part of LDAP status information, if LDAP status is needed to be retrieved.

Error Code	Description
4915229	DNS resolution failed due to an internal error. Contact technical support if this issue persists
4915231	DNS resolution failed for one or more of the specified LDAP servers. Verify that a valid DNS server is configured
23724132	DNS resolution failed for all the specified LDAP servers. Verify that a valid DNS server is configured
4915258	The LDAP configuration is invalid. Verify that the Active Directory domain or servers are reachable and that the network configuration is correct
4915263	Failed to check the current status of LDAP server. Reason:<Reason for="" the="" failure=""></Reason>
4915234	The specified LDAP server or preferred Active Directory server is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast
4915265	The specified bind password or bind DN is invalid
4915264	Certificate verification failed. Verify that a valid certificate is installed

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.
dn_message	array[string]	
ipv4	ipv4	
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ldap_service

Name	Type	Description
_links	_links	
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.

Name	Type	Description
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
status	status	
svm	svm	SVM, applies only to SVM-scoped objects.
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the LDAP configuration for an SVM

POST `/name-services/ldap`

Introduced In: 9.6

Creates an LDAP configuration for an SVM.

Important notes

- Each SVM can have one LDAP configuration.
- The LDAP servers and Active Directory domain are mutually exclusive fields. These fields cannot be empty. At any point in time, either the LDAP servers or Active Directory domain must be populated.

- LDAP configuration with Active Directory domain cannot be created on an admin SVM.
- IPv6 must be enabled if IPv6 family addresses are specified.

The following parameters are optional:

- preferred AD servers
- schema
- port
- ldaps_enabled
- min_bind_level
- bind_password
- base_scope
- use_start_tls
- session_security
- referral_enabled
- bind_as_cifs_server
- query_timeout
- user_dn
- user_scope
- group_dn
- group_scope
- netgroup_dn
- netgroup_scope
- netgroup_byhost_dn
- netgroup_byhost_scope
- is_netgroup_byhost_enabled
- group_membership_filter
- skip_config_validation
- try_channel_binding
- restrict_discovery_to_site

Configuring more than one LDAP server is recommended to avoid a single point of failure.
Both FQDNs and IP addresses are supported for the "servers" field.
The Active Directory domain or LDAP servers are validated as part of this operation.

LDAP validation fails in the following scenarios:

1. The server does not have LDAP installed.
2. The server or Active Directory domain is invalid.
3. The server or Active Directory domain is unreachable.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.

Name	Type	Description
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
svm	svm	SVM, applies only to SVM-scoped objects.
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example request

```
{
  "ad_domain": "example.com",
  "base_dn": "dc=domainB,dc=example,dc=com",
  "base_scope": "string",
  "bind_dn": "cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
  "bind_password": "abc",
  "group_dn": "cn=abc,users,dc=com",
  "group_membership_filter": "",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "cn=abc,users,dc=com",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "cn=abc,users,dc=com",
  "netgroup_scope": "string",
  "port": 389,
  "preferred_ad_servers": [
    "11.11.11.11"
  ],
  "schema": "ad_idmu",
  "servers": [
    [
      "10.10.10.10",
      "domainB.example.com"
    ]
  ],
  "session_security": "string",
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv4_state": "string",
    "ipv6": {
      "code": 65537300,
      "dn_messages": [
        "string"
```

```
        ],
        "message": "string",
        "state": "string"
      },
      "ipv6_state": "string",
      "message": "string",
      "state": "string"
    },
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "user_dn": "cn=abc,users,dc=com",
    "user_scope": "string"
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of LDAP records.
records	array[ldap_service]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "ad_domain": "example.com",
      "base_dn": "dc=domainB,dc=example,dc=com",
      "base_scope": "string",
      "bind_dn":
"cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
      "bind_password": "abc",
      "group_dn": "cn=abc,users,dc=com",
      "group_membership_filter": "",
      "group_scope": "string",
      "min_bind_level": "string",
      "netgroup_byhost_dn": "cn=abc,users,dc=com",
      "netgroup_byhost_scope": "string",
      "netgroup_dn": "cn=abc,users,dc=com",
      "netgroup_scope": "string",
      "port": 389,
      "preferred_ad_servers": [
        "11.11.11.11"
      ],
      "schema": "ad_idmu",
      "servers": [
        [
          "10.10.10.10",
          "domainB.example.com"
        ]
      ],
      "session_security": "string",
      "status": {
        "code": 65537300,
        "dn_message": [
          "string"
        ],
        "ipv4": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv4_state": "string",
```

```
        "ipv6": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv6_state": "string",
        "message": "string",
        "state": "string"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "user_dn": "cn=abc,users,dc=com",
      "user_scope": "string"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262186	LDAP Servers cannot be used with Active Directory domain and/or preferred Active Directory servers
2621488	Invalid SVM context
2621706	The specified SVM UUID is incorrect for the specified SVM name
4915203	The specified LDAP schema does not exist
262222	The specified LDAP servers or preferred Active Directory servers contain duplicate server entries

Error Code	Description
4915229	DNS resolution failed due to an internal error. Contact technical support if this issue persists
4915231	DNS resolution failed for one or more of the specified LDAP servers. Verify that a valid DNS server is configured
23724132	DNS resolution failed for all the specified LDAP servers. Verify that a valid DNS server is configured
4915234	The specified LDAP server or preferred Active Directory server is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast
4915248	LDAP servers cannot be empty or "-". Specified Active Directory domain is invalid because it is empty or "-" or it contains either the special characters or "-" at the start or end of the domain)
4915251	STARTTLS and LDAPS cannot be used together
4915257	The LDAP configuration is invalid. Verify that bind-dn and bind password are correct
4915258	The LDAP configuration is invalid. Verify that the Active Directory domain or servers are reachable and that the network configuration is correct
4915259	LDAP configurations with Active Directory domains are not supported on admin SVM.
4915265	The specified bind password or bind DN is invalid
4915264	Certificate verification failed. Verify that a valid certificate is installed
13434916	The SVM is in the process of being created. Wait a few minutes, and then try the command again.
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs
4915252	LDAP Referral is not supported with STARTTLS, with session security levels sign, seal or with LDAPS.
4915266	LDAP site discovery restriction cannot be applied to a mixed version cluster.
656484	The default site needs to be specified to enable site restriction.
4915206	CIFS server is not configured for the vserver. LDAP client configuration requires CIFS server for binding.
4915261	Cannot use port "389" when "ldaps_enabled" is "true".
4915255	Base DN specified in the LDAP client configuration is not available.

Error Code	Description
4915268	The bind_as_cifs_server field cannot be set to true when the CIFS server is in workgroup mode.
4915269	The bind_as_cifs_server field cannot be set to true when the CIFS server is in realm mode.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.
dn_message	array[string]	
ipv4	ipv4	

Name	Type	Description
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ldap_service

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Name	Type	Description
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.

Name	Type	Description
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	

Name	Type	Description
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
svm	svm	SVM, applies only to SVM-scoped objects.
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the LDAP configuration for an SVM

DELETE `/name-services/ldap/{svm.uuid}`

Introduced In: 9.6

Deletes the LDAP configuration of the specified SVM. LDAP can be removed as a source from the ns-switch if LDAP is not used as a source for lookups.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the LDAP configuration for an SVM

GET `/name-services/ldap/{svm.uuid}`

Introduced In: 9.6

Retrieves LDAP configuration for an SVM. All parameters for the LDAP configuration are displayed by default.

Related ONTAP commands

- `ldap show`
- `ldap check -vserver vs0`
- `ldap check-ipv6 -vserver vs0`

Important notes

- The status.code, status.dn_message, status.message, and status.state fields have the same status fields that are returned using the "ldap check" CLI command.
- Refer to the ipv4 or ipv6 objects available in the status field to get specific information about the code, dn_messages, or message and state information for ipv4 or ipv6.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.
base_dn	string	Specifies the default base DN for all searches.

Name	Type	Description
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.

Name	Type	Description
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	

Name	Type	Description
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
status	status	
svm	svm	SVM, applies only to SVM-scoped objects.
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.

Name	Type	Description
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ad_domain": "example.com",
  "base_dn": "dc=domainB,dc=example,dc=com",
  "base_scope": "string",
  "bind_dn": "cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
  "group_dn": "cn=abc,users,dc=com",
  "group_membership_filter": "",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "cn=abc,users,dc=com",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "cn=abc,users,dc=com",
  "netgroup_scope": "string",
  "port": 389,
  "preferred_ad_servers": [
    "11.11.11.11"
  ],
  "schema": "ad_idmu",
  "servers": [
    [
      "10.10.10.10",
      "domainB.example.com"
    ]
  ],
  "session_security": "string",
  "skip_config_validation": true,
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
```

```
      "ipv4_state": "string",
      "ipv6": {
        "code": 65537300,
        "dn_messages": [
          "string"
        ],
        "message": "string",
        "state": "string"
      },
      "ipv6_state": "string",
      "message": "string",
      "state": "string"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "user_dn": "cn=abc,users,dc=com",
    "user_scope": "string"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.

Name	Type	Description
dn_message	array[string]	
ipv4	ipv4	
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the LDAP configuration for an SVM

PATCH `/name-services/ldap/{svm.uuid}`

Introduced In: 9.6

Updates an LDAP configuration of an SVM.

Important notes

- Both mandatory and optional parameters of the LDAP configuration can be updated.
- The LDAP servers and Active Directory domain are mutually exclusive fields. These fields cannot be empty. At any point in time, either the LDAP servers or Active Directory domain must be populated.
- IPv6 must be enabled if IPv6 family addresses are specified.

Configuring more than one LDAP server is recommended to avoid a single point of failure.
Both FQDNs and IP addresses are supported for the "servers" field.
The Active Directory domain or LDAP servers are validated as part of this operation.

LDAP validation fails in the following scenarios:

1. The server does not have LDAP installed.
2. The server or Active Directory domain is invalid.
3. The server or Active Directory domain is unreachable

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.

Name	Type	Description
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Name	Type	Description
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	

Name	Type	Description
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example request

```
{
  "ad_domain": "example.com",
  "base_dn": "dc=domainB,dc=example,dc=com",
  "base_scope": "string",
  "bind_dn": "cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
  "bind_password": "abc",
  "group_dn": "cn=abc,users,dc=com",
  "group_membership_filter": "",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "cn=abc,users,dc=com",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "cn=abc,users,dc=com",
  "netgroup_scope": "string",
  "port": 389,
  "preferred_ad_servers": [
    "11.11.11.11"
  ],
  "schema": "ad_idmu",
  "servers": [
    [
      "10.10.10.10",
      "domainB.example.com"
    ]
  ],
  "session_security": "string",
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv4_state": "string",
    "ipv6": {
      "code": 65537300,
      "dn_messages": [
        "string"
```

```
        ],
        "message": "string",
        "state": "string"
      },
      "ipv6_state": "string",
      "message": "string",
      "state": "string"
    },
    "user_dn": "cn=abc,users,dc=com",
    "user_scope": "string"
  }
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262186	LDAP Servers cannot be used with Active Directory domain and/or preferred Active Directory servers
2621488	Invalid SVM context
2621706	The specified SVM UUID is incorrect for the specified SVM name
4915203	The specified LDAP schema does not exist
262222	The specified LDAP servers or preferred Active Directory servers contain duplicate server entries
4915229	DNS resolution failed due to an internal error. Contact technical support if this issue persists
4915231	DNS resolution failed for one or more of the specified LDAP servers. Verify that a valid DNS server is configured
23724132	DNS resolution failed for all the specified LDAP servers. Verify that a valid DNS server is configured

Error Code	Description
4915234	The specified LDAP server or preferred Active Directory server is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast
4915248	LDAP servers cannot be empty or "-". Specified Active Directory domain is invalid because it is empty or "-" or it contains either the special characters or "-" at the start or end of the domain.
4915251	STARTTLS and LDAPS cannot be used together
4915257	The LDAP configuration is invalid. Verify that the distinguished names and bind password are correct
4915258	The LDAP configuration is invalid. Verify that the Active Directory domain or servers are reachable and that the network configuration is correct
4915259	LDAP configurations with Active Directory domains are not supported on admin SVM.
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs
4915252	LDAP Referral is not supported with STARTTLS, with session security levels sign, seal or with LDAPS.
4915266	LDAP site discovery restriction cannot be applied to a mixed version cluster.
656484	The default site needs to be specified to enable site restriction.
4915206	CIFS server is not configured for the vserver. LDAP client configuration requires CIFS server for binding.
4915244	RPC failure occurred during validation of the LDAP configuration.
4915268	The bind_as_cifs_server field cannot be set to true when the CIFS server is in workgroup mode.
4915269	The bind_as_cifs_server field cannot be set to true when the CIFS server is in realm mode.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.
dn_message	array[string]	
ipv4	ipv4	

Name	Type	Description
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ldap_service

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Name	Type	Description
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.

Name	Type	Description
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	

Name	Type	Description
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage LDAP schemas

Name-services ldap-schemas endpoint overview

Overview

ONTAP provides four default LDAP schemas. These are:

- MS-AD-BIS
  Based on RFC-2307bis. This is the preferred LDAP schema for most standard Windows 2012 and later LDAP deployments.
- AD-IDMU
  Based on Active Directory Identity Management for UNIX. This schema is appropriate for most Windows 2008, Windows 2012, and later AD servers.
- AD-SFU
  Based on Active Directory Services for UNIX. This schema is appropriate for most Windows 2003 and earlier AD servers.
- RFC-2307
  Based on RFC-2307 (an approach that uses LDAP as a network information service). This schema is appropriate for most UNIX AD servers.

Examples

Retrieving LDAP schema information

```
# The API:
GET /api/name-services/ldap-schemas

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap-schemas"

# The response:
```

```
{
"records": [
{
  "owner": {
    "uuid": "eda950c6-0a0c-11ec-bfcf-0050568e9150",
    "name": "athiraacluster-1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/eda950c6-0a0c-11ec-bfcf-0050568e9150"
      }
    }
  },
  "name": "AD-IDMU",
  "_links": {
    "self": {
      "href": "/api/name-services/ldap-schemas/eda950c6-0a0c-11ec-bfcf-
0050568e9150/AD-IDMU"
    }
  }
},
{
  "owner": {
    "uuid": "eda950c6-0a0c-11ec-bfcf-0050568e9150",
    "name": "athiraacluster-1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/eda950c6-0a0c-11ec-bfcf-0050568e9150"
      }
    }
  },
  "name": "AD-SFU",
  "_links": {
    "self": {
      "href": "/api/name-services/ldap-schemas/eda950c6-0a0c-11ec-bfcf-
0050568e9150/AD-SFU"
    }
  }
},
{
  "owner": {
    "uuid": "eda950c6-0a0c-11ec-bfcf-0050568e9150",
    "name": "athiraacluster-1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/eda950c6-0a0c-11ec-bfcf-0050568e9150"
      }
```

```
    }
  },
  "name": "MS-AD-BIS",
  "_links": {
    "self": {
      "href": "/api/name-services/ldap-schemas/eda950c6-0a0c-11ec-bfcf-
0050568e9150/MS-AD-BIS"
    }
  }
},
{
  "owner": {
    "uuid": "eda950c6-0a0c-11ec-bfcf-0050568e9150",
    "name": "athiraacluster-1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/eda950c6-0a0c-11ec-bfcf-0050568e9150"
      }
    }
  },
  "name": "RFC-2307",
  "_links": {
    "self": {
      "href": "/api/name-services/ldap-schemas/eda950c6-0a0c-11ec-bfcf-
0050568e9150/RFC-2307"
    }
  }
}
],
"num_records": 4,
"_links": {
"self": {
  "href": "/api/name-services/ldap-schemas"
}
}
}
```


Retrieving LDAP schema information for a given SVM and "name"

```
# The API:
GET /api/name-services/ldap-schemas
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/ldap-schemas/eda950c6-
0a0c-11ec-bfcf-0050568e9150/RFC-2307"

# The response:
{
"owner": {
"uuid": "eda950c6-0a0c-11ec-bfcf-0050568e9150",
"name": "svm1",
"_links": {
  "self": {
    "href": "/api/svm/svms/eda950c6-0a0c-11ec-bfcf-0050568e9150"
  }
}
},
"name": "RFC-2307",
"comment": "Schema based on RFC 2307 (read-only)",
"name_mapping": {
"account": {
  "unix": "unixAccount",
  "windows": "windowsAccount"
},
"windows_to_unix": {
  "attribute": "windowsAccount",
  "no_domain_prefix": false,
  "object_class": "posixAccount"
}
},
"rfc2307": {
"attribute": {
  "gecos": "gecos",
  "gid_number": "gidNumber",
  "home_directory": "homeDirectory",
  "login_shell": "loginShell",
  "uid": "uid",
  "uid_number": "uidNumber",
  "user_password": "userPassword"
},
"cn": {
  "group": "cn",
  "netgroup": "cn"
},
"member": {
  "nis_netgroup": "memberNisNetgroup",
  "uid": "memberUid"
},
```

```
"nis": {
  "netgroup_triple": "nisNetgroupTriple",
  "netgroup": "nisNetgroup",
  "object": "nisObject",
  "mapname": "nisMapName",
  "mapentry": "nisMapEntry"
},
"posix": {
  "account": "posixAccount",
  "group": "posixGroup"
}
},
"rfc2307bis": {
"enabled": false,
"group_of_unique_names": "groupOfUniqueNames",
"maximum_groups": 256,
"unique_member": "uniqueMember"
},
"scope": "cluster",
"global_schema": true,
"_links": {
"self": {
  "href": "/api/name-services/ldap-schemas/eda950c6-0a0c-11ec-bfcf-
0050568e9150/RFC-2307"
}
}
}
```


Creating an LDAP schema

```
# The API:
POST /api/name-services/ldap-schemas

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/ldap-schemas" -H
"accept: application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H "Content-Type: application/json" -d "{ \"name\":
\"schema\",\"template\": { \"name\": \"AD-IDMU\" }, \"owner\": { \"uuid\":
\"52ba8197-0a23-11ec-9622-0050568e9150\", \"name\" : \"svm1\" }}"
```

Updating an LDAP schema

```
# The API:
PATCH /api/name-services/ldap-schemas/{owner.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/ldap-schemas/52ba8197-
0a23-11ec-9622-0050568e9150/schema" -H "authorization: Basic
YWRtaW46bmV0YXBwMSE=" -H "Content-Type: application/json" -d "{
\"comment\": \"This is a comment for schema\"}"
```

Deleting an LDAP schema

```
# The API:
DELETE /api/name-services/ldap-schemas/{owner.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/ldap-schemas/52ba8197-
0a23-11ec-9622-0050568e9150/schema"
```

Retrieve all LDAP schemas

GET `/name-services/ldap-schemas`

Introduced In: 9.11

Retrieves all the LDAP schemas.

Related ONTAP commands

- `vserver services name-service ldap client schema show`

Parameters

Name	Type	In	Required	Description
rfc2307.nis.mapentry	string	query	False	Filter by rfc2307.nis.mapentry

Name	Type	In	Required	Description
rfc2307.nis.object	string	query	False	Filter by rfc2307.nis.object
rfc2307.nis.mapname	string	query	False	Filter by rfc2307.nis.mapname
rfc2307.nis.netgroup_triple	string	query	False	Filter by rfc2307.nis.netgroup_triple
rfc2307.nis.netgroup	string	query	False	Filter by rfc2307.nis.netgroup
rfc2307.attribute.gid_number	string	query	False	Filter by rfc2307.attribute.gid_number
rfc2307.attribute.gecos	string	query	False	Filter by rfc2307.attribute.gecos
rfc2307.attribute.user_password	string	query	False	Filter by rfc2307.attribute.user_password
rfc2307.attribute.uid_number	string	query	False	Filter by rfc2307.attribute.uid_number
rfc2307.attribute.uid	string	query	False	Filter by rfc2307.attribute.uid
rfc2307.attribute.login_shell	string	query	False	Filter by rfc2307.attribute.login_shell
rfc2307.attribute.home_directory	string	query	False	Filter by rfc2307.attribute.home_directory
rfc2307.posix.account	string	query	False	Filter by rfc2307.posix.account
rfc2307.posix.group	string	query	False	Filter by rfc2307.posix.group

Name	Type	In	Required	Description
rfc2307.cn.group	string	query	False	Filter by rfc2307.cn.group
rfc2307.cn.netgroup	string	query	False	Filter by rfc2307.cn.netgroup
rfc2307.member.uid	string	query	False	Filter by rfc2307.member.uid
rfc2307.member.nis_netgroup	string	query	False	Filter by rfc2307.member.nis_netgroup
rfc2307bis.enabled	boolean	query	False	Filter by rfc2307bis.enabled
rfc2307bis.group_of_unique_names	string	query	False	Filter by rfc2307bis.group_of_unique_names
rfc2307bis.unique_member	string	query	False	Filter by rfc2307bis.unique_member
rfc2307bis.maximum_groups	integer	query	False	Filter by rfc2307bis.maximum_groups • Max value: 1024 • Min value: 1
comment	string	query	False	Filter by comment
scope	string	query	False	Filter by scope
name	string	query	False	Filter by name • maxLength: 32 • minLength: 1
global_schema	boolean	query	False	Filter by global_schema
owner.name	string	query	False	Filter by owner.name

Name	Type	In	Required	Description
owner.uuid	string	query	False	Filter by owner.uuid
name_mapping.account.windows	string	query	False	Filter by name_mapping.account.windows
name_mapping.account.unix	string	query	False	Filter by name_mapping.account.unix
name_mapping.windows_to_unix.no_domain_prefix	boolean	query	False	Filter by name_mapping.windows_to_unix.no_domain_prefix
name_mapping.windows_to_unix.object_class	string	query	False	Filter by name_mapping.windows_to_unix.object_class
name_mapping.windows_to_unix.attribute	string	query	False	Filter by name_mapping.windows_to_unix.attribute
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of LDAP schema records.
records	array[ldap_schema]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "Schema based on Active Directory Services for UNIX
(read-only).",
      "global_schema": 1,
      "name": "AD-SFU-v1",
      "name_mapping": {
        "account": {
          "unix": "windowsAccount",
          "windows": "windowsAccount"
        },
        "windows_to_unix": {
          "attribute": "windowsAccount",
          "no_domain_prefix": "",
          "object_class": "User"
        }
      },
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "rfc2307": {
        "attribute": {
          "gecos": "name",
```

```
          "gid_number": "msSFU30GidNumber",
          "home_directory": "msSFU30HomeDirectory",
          "login_shell": "msSFU30LoginShell",
          "uid": "sAMAccountName",
          "uid_number": "msSFU30UidNumber",
          "user_password": "msSFU30Password"
        },
        "cn": {
          "group": "cn",
          "netgroup": "name"
        },
        "member": {
          "nis_netgroup": "msSFU30MemberNisNetgroup",
          "uid": "msSFU30MemberUid"
        },
        "nis": {
          "mapentry": "msSFU30NisMapEntry",
          "mapname": "msSFU30NisMapName",
          "netgroup": "msSFU30NisNetGroup",
          "netgroup_triple": "msSFU30MemberOfNisNetgroup",
          "object": "msSFU30NisObject"
        },
        "posix": {
          "account": "User",
          "group": "Group"
        }
      },
      "rfc2307bis": {
        "enabled": "",
        "group_of_unique_names": "groupOfUniqueNames",
        "maximum_groups": 256,
        "unique_member": "uniqueMember"
      },
      "scope": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ldap_schema_account

Name	Type	Description
unix	string	Attribute name used to retrieve UNIX account information.
windows	string	Attribute name used to retrieve Windows account information for a UNIX user account.

windows_to_unix

Name	Type	Description
attribute	string	Attribute name used to retrieve the UNIX account information for a Windows user account.
no_domain_prefix	boolean	Indicates whether or not the name for Windows to UNIX name mapping should have a domain prefix.
object_class	string	Name used to represent the windowsToUnix object class.

ldap_schema_name_mapping

Name	Type	Description
account	ldap_schema_account	
windows_to_unix	windows_to_unix	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

attribute

Name	Type	Description
gecos	string	RFC 2307 gecos attribute.
gid_number	string	RFC 2307 gidNumber attribute.
home_directory	string	RFC 2307 homeDirectory attribute.
login_shell	string	RFC 2307 loginShell attribute.
uid	string	RFC 1274 userid attribute used by RFC 2307 as UID.
uid_number	string	RFC 2307 uidNumber attribute.
user_password	string	RFC 2256 userPassword attribute used by RFC 2307.

cn

Name	Type	Description
group	string	RFC 2256 cn attribute used by RFC 2307 when working with groups.

Name	Type	Description
netgroup	string	RFC 2256 cn attribute used by RFC 2307 when working with netgroups.

member

Name	Type	Description
nis_netgroup	string	RFC 2307 memberNisNetgroup attribute.
uid	string	RFC 2307 memberUid attribute.

nis

Name	Type	Description
mapentry	string	RFC 2307 nisMapEntry attribute.
mapname	string	RFC 2307 nisMapName attribute.
netgroup	string	RFC 2307 nisNetgroup object class.
netgroup_triple	string	RFC 2307 nisNetgroupTriple attribute.
object	string	RFC 2307 nisObject object class.

posix

Name	Type	Description
account	string	RFC 2307 posixAccount object class.
group	string	RFC 2307 posixGroup object class.

rfc2307

Name	Type	Description
attribute	attribute	
cn	cn	

Name	Type	Description
member	member	
nis	nis	
posix	posix	

rfc2307bis

Name	Type	Description
enabled	boolean	Indicates whether RFC 2307bis is enabled for the client schema.
group_of_unique_names	string	RFC 2307bis groupOfUniqueNames object class.
maximum_groups	integer	Maximum number of groups supported when RFC 2307bis is enabled.
unique_member	string	RFC 2307bis uniqueMember attribute.

template

The existing schema template you want to copy.

Name	Type	Description
_links	_links	
name	string	The name of the schema.

ldap_schema

Name	Type	Description
_links	_links	
comment	string	Comment to associate with the schema.
global_schema	boolean	A global schema that can be used by all the SVMs.
name	string	The name of the schema being created, modified or deleted.
name_mapping	ldap_schema_name_mapping	

Name	Type	Description
owner	owner	SVM, applies only to SVM-scoped objects.
rfc2307	rfc2307	
rfc2307bis	rfc2307bis	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an LDAP schema

POST `/name-services/ldap-schemas`

Introduced In: 9.11

Creates an LDAP schema.

Important notes

- To create a new schema, first create a copy of the default schemas provided by ONTAP and then modify the copy accordingly.
- If no value is specified for the owner.uuid or owner.name fields, the cserver UUID and name are used by default.

Related ONTAP commands

- `vserver services name-service ldap client schema copy`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
global_schema	boolean	A global schema that can be used by all the SVMs.
name	string	The name of the schema being created, modified or deleted.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
template	template	The existing schema template you want to copy.

Example request

```
{
  "global_schema": 1,
  "name": "AD-SFU-v1",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "template": {
    "name": "AD-SFU-v1"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
global_schema	boolean	A global schema that can be used by all the SVMs.
name	string	The name of the schema being created, modified or deleted.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
template	template	The existing schema template you want to copy.

Example response

```
{
  "global_schema": 1,
  "name": "AD-SFU-v1",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "template": {
    "name": "AD-SFU-v1"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621706	The specified SVM UUID is incorrect for the specified SVM name.
4915221	LDAP schema name in use in data SVM.
4915222	LDAP schema name in use in admin SVM.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ldap_schema_account

Name	Type	Description
unix	string	Attribute name used to retrieve UNIX account information.
windows	string	Attribute name used to retrieve Windows account information for a UNIX user account.

windows_to_unix

Name	Type	Description
attribute	string	Attribute name used to retrieve the UNIX account information for a Windows user account.
no_domain_prefix	boolean	Indicates whether or not the name for Windows to UNIX name mapping should have a domain prefix.
object_class	string	Name used to represent the windowsToUnix object class.

ldap_schema_name_mapping

Name	Type	Description
account	ldap_schema_account	
windows_to_unix	windows_to_unix	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

attribute

Name	Type	Description
gecos	string	RFC 2307 gecos attribute.
gid_number	string	RFC 2307 gidNumber attribute.
home_directory	string	RFC 2307 homeDirectory attribute.
login_shell	string	RFC 2307 loginShell attribute.
uid	string	RFC 1274 userid attribute used by RFC 2307 as UID.
uid_number	string	RFC 2307 uidNumber attribute.
user_password	string	RFC 2256 userPassword attribute used by RFC 2307.

cn

Name	Type	Description
group	string	RFC 2256 cn attribute used by RFC 2307 when working with groups.
netgroup	string	RFC 2256 cn attribute used by RFC 2307 when working with netgroups.

member

Name	Type	Description
nis_netgroup	string	RFC 2307 memberNisNetgroup attribute.
uid	string	RFC 2307 memberUid attribute.

nis

Name	Type	Description
mapentry	string	RFC 2307 nisMapEntry attribute.
mapname	string	RFC 2307 nisMapName attribute.
netgroup	string	RFC 2307 nisNetgroup object class.
netgroup_triple	string	RFC 2307 nisNetgroupTriple attribute.
object	string	RFC 2307 nisObject object class.

posix

Name	Type	Description
account	string	RFC 2307 posixAccount object class.
group	string	RFC 2307 posixGroup object class.

rfc2307

Name	Type	Description
attribute	attribute	
cn	cn	
member	member	
nis	nis	
posix	posix	

rfc2307bis

Name	Type	Description
enabled	boolean	Indicates whether RFC 2307bis is enabled for the client schema.
group_of_unique_names	string	RFC 2307bis groupOfUniqueNames object class.
maximum_groups	integer	Maximum number of groups supported when RFC 2307bis is enabled.
unique_member	string	RFC 2307bis uniqueMember attribute.

template

The existing schema template you want to copy.

Name	Type	Description
name	string	The name of the schema.

ldap_schema

Name	Type	Description
global_schema	boolean	A global schema that can be used by all the SVMs.
name	string	The name of the schema being created, modified or deleted.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
template	template	The existing schema template you want to copy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an existing schema

DELETE `/name-services/ldap-schemas/{owner.uuid}/{name}`

Introduced In: 9.11

Deletes an existing schema.

Related ONTAP commands

- `vserver services name-service ldap client schema delete`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
name	string	path	True	LDAP schema name.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4915204	Failed to delete. The LDAP schema is being used by at least one LDAP client configuration.
4915205	The LDAP schema is a default schema and cannot be modified or deleted.
4915217	LDAP schema is owned by the admin SVM.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the LDAP schema details for an owner and schema

GET `/name-services/ldap-schemas/{owner.uuid}/{name}`

Introduced In: 9.11

Retrieves LDAP schema details for a given owner and schema.

Related ONTAP commands

- `vserver services name-service ldap client schema show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
name	string	path	True	LDAP schema name.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	Comment to associate with the schema.
global_schema	boolean	A global schema that can be used by all the SVMs.
name	string	The name of the schema being created, modified or deleted.
name_mapping	ldap_schema_name_mapping	
owner	owner	SVM, applies only to SVM-scoped objects.
rfc2307	rfc2307	
rfc2307bis	rfc2307bis	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "Schema based on Active Directory Services for UNIX (read-only).",
  "global_schema": 1,
  "name": "AD-SFU-v1",
  "name_mapping": {
    "account": {
      "unix": "windowsAccount",
      "windows": "windowsAccount"
    },
    "windows_to_unix": {
      "attribute": "windowsAccount",
      "no_domain_prefix": "",
      "object_class": "User"
    }
  },
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "rfc2307": {
    "attribute": {
      "gecos": "name",
      "gid_number": "msSFU30GidNumber",
      "home_directory": "msSFU30HomeDirectory",
      "login_shell": "msSFU30LoginShell",
      "uid": "sAMAccountName",
      "uid_number": "msSFU30UidNumber",
      "user_password": "msSFU30Password"
    },
    "cn": {
      "group": "cn",
      "netgroup": "name"
    },
```

```
    "member": {
      "nis_netgroup": "msSFU30MemberNisNetgroup",
      "uid": "msSFU30MemberUid"
    },
    "nis": {
      "mapentry": "msSFU30NisMapEntry",
      "mapname": "msSFU30NisMapName",
      "netgroup": "msSFU30NisNetGroup",
      "netgroup_triple": "msSFU30MemberOfNisNetgroup",
      "object": "msSFU30NisObject"
    },
    "posix": {
      "account": "User",
      "group": "Group"
    }
  },
  "rfc2307bis": {
    "enabled": "",
    "group_of_unique_names": "groupOfUniqueNames",
    "maximum_groups": 256,
    "unique_member": "uniqueMember"
  },
  "scope": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ldap_schema_account

Name	Type	Description
unix	string	Attribute name used to retrieve UNIX account information.
windows	string	Attribute name used to retrieve Windows account information for a UNIX user account.

windows_to_unix

Name	Type	Description
attribute	string	Attribute name used to retrieve the UNIX account information for a Windows user account.
no_domain_prefix	boolean	Indicates whether or not the name for Windows to UNIX name mapping should have a domain prefix.
object_class	string	Name used to represent the windowsToUnix object class.

ldap_schema_name_mapping

Name	Type	Description
account	ldap_schema_account	
windows_to_unix	windows_to_unix	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

attribute

Name	Type	Description
gecos	string	RFC 2307 gecos attribute.
gid_number	string	RFC 2307 gidNumber attribute.
home_directory	string	RFC 2307 homeDirectory attribute.
login_shell	string	RFC 2307 loginShell attribute.
uid	string	RFC 1274 userid attribute used by RFC 2307 as UID.
uid_number	string	RFC 2307 uidNumber attribute.
user_password	string	RFC 2256 userPassword attribute used by RFC 2307.

cn

Name	Type	Description
group	string	RFC 2256 cn attribute used by RFC 2307 when working with groups.
netgroup	string	RFC 2256 cn attribute used by RFC 2307 when working with netgroups.

member

Name	Type	Description
nis_netgroup	string	RFC 2307 memberNisNetgroup attribute.
uid	string	RFC 2307 memberUid attribute.

nis

Name	Type	Description
mapentry	string	RFC 2307 nisMapEntry attribute.
mapname	string	RFC 2307 nisMapName attribute.
netgroup	string	RFC 2307 nisNetgroup object class.
netgroup_triple	string	RFC 2307 nisNetgroupTriple attribute.
object	string	RFC 2307 nisObject object class.

posix

Name	Type	Description
account	string	RFC 2307 posixAccount object class.
group	string	RFC 2307 posixGroup object class.

rfc2307

Name	Type	Description
attribute	attribute	
cn	cn	
member	member	
nis	nis	
posix	posix	

rfc2307bis

Name	Type	Description
enabled	boolean	Indicates whether RFC 2307bis is enabled for the client schema.
group_of_unique_names	string	RFC 2307bis groupOfUniqueNames object class.
maximum_groups	integer	Maximum number of groups supported when RFC 2307bis is enabled.
unique_member	string	RFC 2307bis uniqueMember attribute.

template

The existing schema template you want to copy.

Name	Type	Description
_links	_links	
name	string	The name of the schema.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the LDAP schema details for an owner and schema

PATCH `/name-services/ldap-schemas/{owner.uuid}/{name}`

Introduced In: 9.11

Updates LDAP schema details for a given owner and schema.

Important notes

- The default LDAP schemas provided by ONTAP cannot be modified.
- LDAP schemas can only be modified by the owner of the schema.

Related ONTAP commands

- `vserver services name-service ldap client schema modify`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
name	string	path	True	LDAP schema name.

Request Body

Name	Type	Description
comment	string	Comment to associate with the schema.
global_schema	boolean	A global schema that can be used by all the SVMs.
name_mapping	ldap_schema_name_mapping	
rfc2307	rfc2307	
rfc2307bis	rfc2307bis	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "comment": "Schema based on Active Directory Services for UNIX (read-only).",
  "global_schema": 1,
  "name_mapping": {
    "account": {
      "unix": "windowsAccount",
      "windows": "windowsAccount"
    },
    "windows_to_unix": {
      "attribute": "windowsAccount",
      "no_domain_prefix": "",
      "object_class": "User"
    }
  },
  "rfc2307": {
    "attribute": {
      "gecos": "name",
      "gid_number": "msSFU30GidNumber",
      "home_directory": "msSFU30HomeDirectory",
      "login_shell": "msSFU30LoginShell",
      "uid": "sAMAccountName",
      "uid_number": "msSFU30UidNumber",
      "user_password": "msSFU30Password"
    },
    "cn": {
      "group": "cn",
      "netgroup": "name"
    },
    "member": {
      "nis_netgroup": "msSFU30MemberNisNetgroup",
      "uid": "msSFU30MemberUid"
    },
    "nis": {
      "mapentry": "msSFU30NisMapEntry",
      "mapname": "msSFU30NisMapName",
      "netgroup": "msSFU30NisNetGroup",
      "netgroup_triple": "msSFU30MemberOfNisNetgroup",
      "object": "msSFU30NisObject"
    },
    "posix": {
      "account": "User",
      "group": "Group"
    }
```

```
    },
    "rfc2307bis": {
      "enabled": "",
      "group_of_unique_names": "groupOfUniqueNames",
      "maximum_groups": 256,
      "unique_member": "uniqueMember"
    },
    "scope": "string"
  }
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4915205	The LDAP schema is a default schema and cannot be modified or deleted.
4915217	LDAP schema is owned by the admin SVM.
4915223	LDAP schema does not belong to the admin SVM.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ldap_schema_account

Name	Type	Description
unix	string	Attribute name used to retrieve UNIX account information.
windows	string	Attribute name used to retrieve Windows account information for a UNIX user account.

windows_to_unix

Name	Type	Description
attribute	string	Attribute name used to retrieve the UNIX account information for a Windows user account.
no_domain_prefix	boolean	Indicates whether or not the name for Windows to UNIX name mapping should have a domain prefix.
object_class	string	Name used to represent the windowsToUnix object class.

ldap_schema_name_mapping

Name	Type	Description
account	ldap_schema_account	
windows_to_unix	windows_to_unix	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

attribute

Name	Type	Description
gecos	string	RFC 2307 gecos attribute.
gid_number	string	RFC 2307 gidNumber attribute.
home_directory	string	RFC 2307 homeDirectory attribute.
login_shell	string	RFC 2307 loginShell attribute.
uid	string	RFC 1274 userid attribute used by RFC 2307 as UID.
uid_number	string	RFC 2307 uidNumber attribute.
user_password	string	RFC 2256 userPassword attribute used by RFC 2307.

cn

Name	Type	Description
group	string	RFC 2256 cn attribute used by RFC 2307 when working with groups.
netgroup	string	RFC 2256 cn attribute used by RFC 2307 when working with netgroups.

member

Name	Type	Description
nis_netgroup	string	RFC 2307 memberNisNetgroup attribute.
uid	string	RFC 2307 memberUid attribute.

nis

Name	Type	Description
mapentry	string	RFC 2307 nisMapEntry attribute.
mapname	string	RFC 2307 nisMapName attribute.
netgroup	string	RFC 2307 nisNetgroup object class.
netgroup_triple	string	RFC 2307 nisNetgroupTriple attribute.
object	string	RFC 2307 nisObject object class.

posix

Name	Type	Description
account	string	RFC 2307 posixAccount object class.
group	string	RFC 2307 posixGroup object class.

rfc2307

Name	Type	Description
attribute	attribute	
cn	cn	
member	member	
nis	nis	
posix	posix	

rfc2307bis

Name	Type	Description
enabled	boolean	Indicates whether RFC 2307bis is enabled for the client schema.
group_of_unique_names	string	RFC 2307bis groupOfUniqueNames object class.
maximum_groups	integer	Maximum number of groups supported when RFC 2307bis is enabled.
unique_member	string	RFC 2307bis uniqueMember attribute.

template

The existing schema template you want to copy.

Name	Type	Description
name	string	The name of the schema.

ldap_schema

Name	Type	Description
comment	string	Comment to associate with the schema.
global_schema	boolean	A global schema that can be used by all the SVMs.
name_mapping	ldap_schema_name_mapping	
rfc2307	rfc2307	
rfc2307bis	rfc2307bis	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage local mapping for hostnames

Name-services local-hosts endpoint overview

Overview

Displays and manages local mapping for hostnames.

Retrieving all hosts table entries

The local-hosts GET endpoint to retrieve all hosts table entries.

Examples

Retrieving all the fields of all hosts table entries.

```
# The API:
GET /api/name-services/local-hosts

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/local-
hosts?return_records=true&return_timeout=15&fields=*" -H "accept:
application/hal+json"

# The response:
{
 "records": [
{
```

```
  "owner": {
  "uuid": "6cdf045c-87ae-11eb-a56a-0050568e0287",
  "name": "svm1",
  "_links": {
     "self": {
     "href": "/api/svm/svms/6cdf045c-87ae-11eb-a56a-0050568e0287"
     }
   }
  },
  "address": "1.1.1.1",
  "hostname": "host.sales.foo.com",
  "aliases": [
          "host1.sales.foo.com",
          "host2.sakes.foo.com"
  ],
  "_links": {
   "self": {
   "href": "/api/name-services/local-hosts/6cdf045c-87ae-11eb-a56a-
0050568e0287/1.1.1.1"
  }
  }
  },
{
  "owner": {
  "uuid": "9d080552-7bff-11eb-a56a-0050568e0287",
  "name": "svm2",
  "_links": {
   "self": {
   "href": "/api/svm/svms/9d080552-7bff-11eb-a56a-0050568e0287"
   }
  }
  },
  "address": "2.2.2.2",
  "hostname": "samplehost2",
  "_links": {
  "self": {
  "href": "/api/name-services/local-hosts/9d080552-7bff-11eb-a56a-
0050568e0287/2.2.2.2"
  }
  }
  }
  ],
  "num_records": 2,
  "_links": {
  "self": {
  "href": "/api/name-services/local-
```

```
hosts?return_records=true&return_timeout=15&fields=*"
  }
  }
}
```

Retrieving the hosts table entry of a given svm and address(ipv4/ipv6).

```
# The API:
GET /api/name-services/local-hosts/{owner.uuid}/{address}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/local-hosts/9d080552-
7bff-11eb-a56a-0050568e0287/3.3.3.3" -H "accept: application/hal+json"

# The response:
{
 "owner": {
 "uuid": "9d080552-7bff-11eb-a56a-0050568e0287",
 "name": "svm1",
 "_links": {
"self": {
  "href": "/api/svm/svms/9d080552-7bff-11eb-a56a-0050568e0287"
 }
}
 },
 "address": "3.3.3.3",
 "hostname": "samplehost3",
 "aliases": [
 "host1.sales.foo.com",
 "host2.sakes.foo.com"
],
 "_links": {
 "self": {
 "href": "/api/name-services/local-hosts/9d080552-7bff-11eb-a56a-
0050568e0287/3.3.3.3"
 }
 }
}
```

Creating a hosts table entry

The local-hosts POST endpoint creates a new hosts table entry.

Examples

Creating a hosts table entry with all fields.

```
# The API:
POST /api/name-services/local-hosts

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/local-
hosts?return_records=false" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"address\": \"3.3.3.3\", \"aliases\": [
\"host1.sales.foo.com\", \"host2.sakes.foo.com\" ],
\"hostname\":\"samplehost3\", \"owner\": { \"name\": \"svm2\", \"uuid\":
\"9d080552-7bff-11eb-a56a-0050568e0287\" }}"
```

Creating a hosts table entry with only required fields.

```
# The API:
POST /api/name-services/local-hosts

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/local-
hosts?return_records=false" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"address\": \"123.123.123.12\",
\"hostname\": \"host.sales.foo.com\", \"owner\": { \"name\": \"svm2\",
\"uuid\": \"9d080552-7bff-11eb-a56a-0050568e0287\" }}"
```

Updating a hosts table entry

The local-hosts PATCH endpoint updates an existing hosts table entry.

Example

Updating aliases and hostname of a given svm and address(ipv4/ipv6).

```
# The API:
PATCH /api/name-services/local-hosts/{owner.uuid}/{address}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/local-hosts/9d080552-
7bff-11eb-a56a-0050568e0287/123.123.123.123" -H "accept: application/json"
-H "Content-Type: application/json" -d "{ \"aliases\": [
\"host1.sales.foo.com\", \"host2.sakes.foo.com\" ], \"hostname\":
\"host.sales.foo.com\"}"
```

Deleting a hosts table entry

The local-hosts DELETE endpoint deletes an existing hosts table entry.

Example

Deleting the hosts table entry of a given svm and address(ipv4/ipv6).

```
# The API:
DELETE /api/name-services/local-hosts/{owner.uuid}/{address}

#The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/local-hosts/9d080552-
7bff-11eb-a56a-0050568e0287/1.1.1.1" -H "accept: application/json"
```

Retrieve IP to hostname mappings for all SVMs in a cluster

GET `/name-services/local-hosts`

Introduced In: 9.10

Retrieves all IP to hostname mappings for all SVMs of the cluster.

Related ONTAP commands

- `vserver services name-service dns hosts show`

Learn more

- DOC /name-services/local-hosts

Parameters

Name	Type	In	Required	Description
aliases	string	query	False	Filter by aliases
scope	string	query	False	Filter by scope
hostname	string	query	False	Filter by hostname • maxLength: 255 • minLength: 1
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
address	string	query	False	Filter by address
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of hosts to IP records.
records	array[local_host]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "address": "123.123.123.123",
      "aliases": [
        "host1.sales.foo.com",
        "host2.sakes.foo.com"
      ],
      "hostname": "host.sales.foo.com",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_host

Name	Type	Description
_links	_links	
address	string	IPv4/IPv6 address in dotted form.
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
owner	owner	SVM, applies only to SVM-scoped objects.

Name	Type	Description
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new IP to hostname mapping

POST `/name-services/local-hosts`

Introduced In: 9.10

Creates a new cluster-scoped or SVM-scoped IP to hostname mapping. For SVM-scoped mappings, include either the SVM name as owner.name or the SVM UUID as owner.uuid in the request body, along with other necessary parameters. For cluster-scoped mappings, specifying owner.uuid or owner.name is not required.

Required properties

- `address` - IPv4/IPv6 address in dotted form.
- `hostname` - Canonical hostname.

Optional properties

- `owner.uuid` or `owner.name` - Specify the name or UUID of an existing SVM to create an SVM-scoped IP-to-host mapping.
- `aliases` - The list of aliases.

Related ONTAP commands

- `vserver services name-service dns hosts create`

Learn more

- DOC /name-services/local-hosts

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
address	string	IPv4/IPv6 address in dotted form.
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "address": "123.123.123.123",
  "aliases": [
    "host1.sales.foo.com",
    "host2.sakes.foo.com"
  ],
  "hostname": "host.sales.foo.com",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1377682	IPv6 is not enabled in the cluster.
1966253	IPv6 is not enabled in the cluster. Enable IPv6 using command "network options ipv6 modify -enabled true" and try again.
2621706	The specified owner UUID is incorrect for the specified owner name.
8912896	Only admin or data Vservers allowed.

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.
23724155	The specified IPv4 address is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast.
23724156	The specified IPv6 address is not supported because it is one of the following: ::, link-local, multicast, v4-compatible, v4-mapped, or loopback.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_host

Name	Type	Description
address	string	IPv4/IPv6 address in dotted form.
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an existing host object

DELETE `/name-services/local-hosts/{owner.uuid}/{address}`

Introduced In: 9.10

Deletes an existing host object.

Related ONTAP commands

- `vserver services name-service dns hosts delete`

Learn more

- DOC /name-services/local-hosts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
address	string	path	True	The IP address.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a hostname mapping for an SVM

GET `/name-services/local-hosts/{owner.uuid}/{address}`

Introduced In: 9.10

For a specified SVM and IP address, returns the corresponding IP to hostname mapping.

Related ONTAP commands

- `vserver services name-service dns hosts show`

Learn more

- DOC /name-services/local-hosts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
address	string	path	True	The IP address.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
address	string	IPv4/IPv6 address in dotted form.
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
owner	owner	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "address": "123.123.123.123",
  "aliases": [
    "host1.sales.foo.com",
    "host2.sakes.foo.com"
  ],
  "hostname": "host.sales.foo.com",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a hostname mapping for an SVM

PATCH `/name-services/local-hosts/{owner.uuid}/{address}`

Introduced In: 9.10

For a specified SVM and IP address, modifies the corresponding IP to hostname mapping.

Related ONTAP commands

- `vserver services name-service dns hosts modify`

Learn more

- DOC /name-services/local-hosts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	UUID of the owner to which this object belongs.
address	string	path	True	The IP address.

Request Body

Name	Type	Description
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "aliases": [
    "host1.sales.foo.com",
    "host2.sakes.foo.com"
  ],
  "hostname": "host.sales.foo.com",
  "scope": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724055	Internal error. Configuration for Vserver failed. Verify that the cluster is healthy, then try the command again. For further assistance, contact technical support.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

local_host

Name	Type	Description
aliases	array[string]	The list of aliases.
hostname	string	Canonical hostname.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage name mappings for SVMs

Name-services name-mappings endpoint overview

Overview

Name mapping is used to map CIFS identities to UNIX identities, Kerberos identities to UNIX identities, and UNIX identities to CIFS identities. It needs this information to obtain user credentials and provide proper file access regardless of whether they are connecting from an NFS client or a CIFS client.

The system keeps a set of conversion rules for each Storage Virtual Machine (SVM). Each rule consists of two pieces: a pattern and a replacement. Conversions start at the beginning of the appropriate list and perform a substitution based on the first matching rule. The pattern is a UNIX-style regular expression. The replacement is a string containing escape sequences representing subexpressions from the pattern, as in the UNIX sed program.

Name mappings are applied in the order in which they occur in the priority list; for example, a name mapping that occurs at position 2 in the priority list is applied before a name mapping that occurs at position 3. Each mapping direction (Kerberos-to-UNIX, Windows-to-UNIX, and UNIX-to-Windows) has its own priority list. You are prevented from creating two name mappings with the same pattern.

Examples

Creating a name-mapping with client_match as the ip-address

Use the following API to create a name-mapping. Note the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api//name-services/name-mappings

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/name-
mappings?return_records=true" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"client_match\": \"10.254.101.111/28\",
\"direction\": \"win_unix\", \"index\": 1, \"pattern\":
\"ENGCIFS_AD_USER\", \"replacement\": \"unix_user1\", \"svm\": { \"name\":
\"vs1\", \"uuid\": \"f71d3640-0226-11e9-8526-000c290a8c4b\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "f71d3640-0226-11e9-8526-000c290a8c4b",
      "name": "vs1"
    },
    "direction": "win_unix",
    "index": 1,
    "pattern": "ENGCIFS_AD_USER",
    "replacement": "unix_user1",
    "client_match": "10.254.101.111/28"
  }
]
}
```

Creating a name-mapping with client_match as the hostname

Use the following API to create a name-mapping. Note the *return_records=true* query parameter is used to obtain the newly created entry in the response.

```
# The API:
POST /api//name-services/name-mappings

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/name-
mappings?return_records=true" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"client_match\": \"google.com\",
\"direction\": \"win_unix\", \"index\": 2, \"pattern\":
\"ENGCIFS_AD_USER\", \"replacement\": \"unix_user1\", \"svm\": { \"name\":
\"vs1\", \"uuid\": \"f71d3640-0226-11e9-8526-000c290a8c4b\" }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "f71d3640-0226-11e9-8526-000c290a8c4b",
      "name": "vs1"
    },
    "direction": "win_unix",
    "index": 2,
    "pattern": "ENGCIFS_AD_USER",
    "replacement": "unix_user1",
    "client_match": "google.com"
  }
]
}
```

Retrieving all name-mapping configurations for all SVMs in the cluster

```
# The API:
GET /api/name-services/name-mappings

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/name-
mappings?fields=*&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "f71d3640-0226-11e9-8526-000c290a8c4b",
      "name": "vs1"
    },
    "direction": "win_unix",
    "index": 1,
    "pattern": "ENGCIFS_AD_USER",
    "replacement": "unix_user1",
    "client_match": "10.254.101.111/28"
  },
  {
    "svm": {
      "uuid": "f71d3640-0226-11e9-8526-000c290a8c4b",
      "name": "vs1"
    },
    "direction": "win_unix",
    "index": 2,
    "pattern": "ENGCIFS_AD_USER",
    "replacement": "unix_user1",
    "client_match": "google.com"
  }
],
"num_records": 2
}
```

Retrieving a name-mapping configuration for a specific SVM, and for the specified direction and index

```
# The API:
GET /api/name-services/name-mappings/{svm.uuid}/{direction}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/name-mappings/f71d3640-
0226-11e9-8526-000c290a8c4b/win_unix/1" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "f71d3640-0226-11e9-8526-000c290a8c4b",
  "name": "vs1"
},
"direction": "win_unix",
"index": 1,
"pattern": "ENGCIFS_AD_USER",
"replacement": "unix_user1",
"client_match": "10.254.101.111/28"
}
```

Updating a specific name-mapping configuration

```
# The API:
PATCH /api//name-services/name-mappings/{svm.uuid}/{direction}/{index}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/name-mappings/f71d3640-
0226-11e9-8526-000c290a8c4b/win_unix/1" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"client_match\":
\"10.254.101.222/28\", \"pattern\": \"ENGCIFS_LOCAL_USER\",
\"replacement\": \"pcuser\"}"

# swapping a specified namemapping entry by index
curl -X PATCH "https://<mgmt-ip>/api/name-services/name-mappings/f71d3640-
0226-11e9-8526-000c290a8c4b/win-unix/3?new_index=1" -H "accept:
application/json" -H "Content-Type: application/json" -d "{  \"pattern\":
\"ENGCIFS_AD_USER\", \"replacement\": \"unix_user1\"}"
```

Removing a specific name-mapping configuration

```
# The API:
DELETE /api/name-services/name-mappings/{svm.uuid}/{direction}/{index}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/name-
mappings/f71d3640-0226-11e9-8526-000c290a8c4b/win_unix/1" -H "accept:
application/json"
```

Retrieve the hostname mapping for all SVMs

GET `/name-services/name-mappings`

Introduced In: 9.6

Retrieves the name mapping configuration for all SVMs.

Related ONTAP commands

- `vserver name-mapping show`

Learn more

- DOC /name-services/name-mappings

Parameters

Name	Type	In	Required	Description
client_match	string	query	False	Filter by client_match
replacement	string	query	False	Filter by replacement • maxLength: 256 • minLength: 1
pattern	string	query	False	Filter by pattern • maxLength: 256 • minLength: 1
direction	string	query	False	Filter by direction

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
index	integer	query	False	Filter by index • Max value: 2147483647 • Min value: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[name_mapping]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "client_match": "10.254.101.111/28",
      "direction": "win_unix",
      "index": 1,
      "pattern": "ENGCIFS_AD_USER",
      "replacement": "unix_user1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

name_mapping

Name mapping is used to map CIFS identities to UNIX identities, Kerberos identities to UNIX identities, UNIX identities to CIFS identities, S3 to UNIX identities and S3 to CIFS identities. It needs this information to obtain user credentials and provide proper file access regardless of whether they are connecting from an NFS client, CIFS client or an S3 client.

Name	Type	Description
_links	_links	

Name	Type	Description
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname
direction	string	Direction in which the name mapping is applied. The possible values are: • krb_unix - Kerberos principal name to UNIX user name • win_unix - Windows user name to UNIX user name • unix_win - UNIX user name to Windows user name mapping • s3_unix - S3 user name to UNIX user name mapping • s3_win - S3 user name to Windows user name mapping
index	integer	Position in the list of name mappings.

Name	Type	Description
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create hostname mappings for an SVM

POST `/name-services/name-mappings`

Introduced In: 9.6

Creates name mappings for an SVM.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the name mapping.
- `index` - Name mapping's position in the priority list.
- `direction` - Direction of the name mapping.
- `pattern` - Pattern to match to. Maximum length is 256 characters.
- `replacement` - Replacement pattern to match to. Maximum length is 256 characters.

Recommended optional properties

- `client_match` - Hostname or IP address added to match the pattern to the client's workstation IP address.

Related ONTAP commands

- `vserver name-mapping create`
- `vserver name-mapping insert`

Learn more

- DOC /name-services/name-mappings

Parameters

Name	Type	In	Required	Description
insert_name_map	boolean	query	False	Create a name mapping at a specified position • Introduced in: 9.17 • Default value:
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname
direction	string	Direction in which the name mapping is applied. The possible values are: • krb_unix - Kerberos principal name to UNIX user name • win_unix - Windows user name to UNIX user name • unix_win - UNIX user name to Windows user name mapping • s3_unix - S3 user name to UNIX user name mapping • s3_win - S3 user name to Windows user name mapping
index	integer	Position in the list of name mappings.
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.

Name	Type	Description
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "client_match": "10.254.101.111/28",
  "direction": "win_unix",
  "index": 1,
  "pattern": "ENGCIFS_AD_USER",
  "replacement": "unix_user1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[name_mapping]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "client_match": "10.254.101.111/28",
      "direction": "win_unix",
      "index": 1,
      "pattern": "ENGCIFS_AD_USER",
      "replacement": "unix_user1",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65798185	Failed to resolve the specified hostname
65798173	The name mapping pattern already exists with a more generic IP qualifier
65798149	Invalid index for the name mapping entry
2621706	The specified svm.uuid and svm.name refer to different SVMs

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

name_mapping

Name mapping is used to map CIFS identities to UNIX identities, Kerberos identities to UNIX identities, UNIX identities to CIFS identities, S3 to UNIX identities and S3 to CIFS identities. It needs this information to obtain user credentials and provide proper file access regardless of whether they are connecting from an NFS client, CIFS client or an S3 client.

Name	Type	Description
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname

Name	Type	Description
direction	string	Direction in which the name mapping is applied. The possible values are: • krb_unix - Kerberos principal name to UNIX user name • win_unix - Windows user name to UNIX user name • unix_win - UNIX user name to Windows user name mapping • s3_unix - S3 user name to UNIX user name mapping • s3_win - S3 user name to Windows user name mapping
index	integer	Position in the list of name mappings.
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the name mapping configuration

DELETE `/name-services/name-mappings/{svm.uuid}/{direction}/{index}`

Introduced In: 9.6

Deletes the name mapping configuration.

Related ONTAP commands

- `vserver name-mapping delete`

Learn more

- DOC /name-services/name-mappings

Parameters

Name	Type	In	Required	Description
direction	string	path	True	Direction
index	integer	path	True	Position of the entry in the list
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the name mapping configuration for an SVM

GET `/name-services/name-mappings/{svm.uuid}/{direction}/{index}`

Introduced In: 9.6

Retrieves the name mapping configuration of an SVM.

Related ONTAP commands

- `vserver name-mapping show`

Learn more

- DOC /name-services/name-mappings

Parameters

Name	Type	In	Required	Description
direction	string	path	True	Direction
index	integer	path	True	Position of the entry in the list

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname

Name	Type	Description
direction	string	Direction in which the name mapping is applied. The possible values are: • krb_unix - Kerberos principal name to UNIX user name • win_unix - Windows user name to UNIX user name • unix_win - UNIX user name to Windows user name mapping • s3_unix - S3 user name to UNIX user name mapping • s3_win - S3 user name to Windows user name mapping
index	integer	Position in the list of name mappings.
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "client_match": "10.254.101.111/28",
  "direction": "win_unix",
  "index": 1,
  "pattern": "ENGCIFS_AD_USER",
  "replacement": "unix_user1",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the name mapping configuration for an SVM

PATCH `/name-services/name-mappings/{svm.uuid}/{direction}/{index}`

Introduced In: 9.6

Updates the name mapping configuration of an SVM. The positions can be swapped by providing the `new_index` property.
Swapping is not allowed for entries that have `client_match` property configured.

Related ONTAP commands

- `vserver name-mapping modify`
- `vserver name-mapping swap`

Learn more

- DOC /name-services/name-mappings

Parameters

Name	Type	In	Required	Description
direction	string	path	True	Direction
index	integer	path	True	Position of the entry in the list
new_index	integer	query	False	New position of the Index after a swap is completed. • Introduced in: 9.7
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.

Example request

```
{
  "client_match": "10.254.101.111/28",
  "pattern": "ENGCIFS_AD_USER",
  "replacement": "unix_user1"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65798185	Failed to resolve the specified hostname
65798179	Cannot swap entries because one or both entries have host name or address configured.
	Delete and re-create the new entry at the specified position.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

name_mapping

Name mapping is used to map CIFS identities to UNIX identities, Kerberos identities to UNIX identities, UNIX identities to CIFS identities, S3 to UNIX identities and S3 to CIFS identities. It needs this information to obtain user credentials and provide proper file access regardless of whether they are connecting from an NFS client, CIFS client or an S3 client.

Name	Type	Description
client_match	string	Client workstation IP Address which is matched when searching for the pattern. You can specify the value in any of the following formats: • As an IPv4 address with a subnet mask expressed as a number of bits; for instance, 10.1.12.0/24 • As an IPv6 address with a subnet mask expressed as a number of bits; for instance, fd20:8b1e:b255:4071::/64 • As an IPv4 address with a network mask; for instance, 10.1.16.0/255.255.255.0 • As a hostname

Name	Type	Description
pattern	string	Pattern used to match the name while searching for a name that can be used as a replacement. The pattern is a UNIX-style regular expression. Regular expressions are case-insensitive when mapping from Windows to UNIX, and they are case-sensitive for mappings from Kerberos to UNIX and UNIX to Windows.
replacement	string	The name that is used as a replacement, if the pattern associated with this entry matches.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Display netgroup file details

Name-services netgroup-files svm.uuid endpoint overview

Overview

Displays the netgroup file details or raw netgroup file of an SVM.
Note: The GET collection endpoint is not supported for netgroup files.

Examples

Retrieving the netgroup file status of a given SVM

```
# The API:
GET /api/name-services/netgroup-files/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/netgroup-files/53942195-
1709-11ec-b0d4-0050568efd14" -H "accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "53942195-1709-11ec-b0d4-0050568efd14",
  "name": "svm1"
},
"timestamp": "2021-10-04T13:05:06+05:30",
"hash_value": "729b6e43cee04bcee18efa3aa689881d",
"hash_value_by_host": "eb109a44056a47bdeb4b407ec821a14b",
"file_size": 5118686
}
```

Retrieving the raw netgroup file of a given SVM

```
# The API:
GET /api/name-services/netgroup-files/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/netgroup-files/53942195-
1709-11ec-b0d4-0050568efd14" -H "accept: multipart/form-data"
```

Deleting a netgroup file of a given SVM

```
# The API:
DELETE /api/name-services/netgroup-files/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/netgroup-
files/53942195-1709-11ec-b0d4-0050568efd14" -H "accept: application/json"
```

Delete a netgroup file for an SVM

DELETE `/name-services/netgroup-files/{svm.uuid}`

Introduced In: 9.11

Deletes the netgroup file for a given SVM.

Related ONTAP commands

- `vserver services name-service netgroup file delete`

Learn more

- DOC /name-services/netgroup-files/{svm.uuid}

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the netgroup file details

GET `/name-services/netgroup-files/{svm.uuid}`

Introduced In: 9.11

Retrieves the netgroup file details for a given SVM if the header is set as "accept: application/json".
If the header is set as "accept: multipart/form-data", the raw netgroup file of the given SVM is retrieved.

Important notes

- For a raw netgroup file, set the header as "accept: multipart/form-data" else "accept: application/json" for netgroup file details.
- Maximum size supported for raw netgroup file is 5MB, but netgroup file details of any valid SVM can be retrieved if present.

Related ONTAP commands

- `vserver services name-service netgroup status`
- `vserver services name-service netgroup file show`

Learn more

- DOC /name-services/netgroup-files/{svm.uuid}

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
file_size	integer	File size of the netgroup definitions file in bytes.
hash_value	string	Hash value of the netgroup definitions.
hash_value_by_host	string	Hash value of the netgroup-by-host database.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
timestamp	string	Load time for netgroup definitions.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "file_size": 5118686,
  "hash_value": "e53ec87782356bd6786f146ce0a48449",
  "hash_value_by_host": "e012b7f62e4810936725ed1239018314",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timestamp": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NIS server configurations

Name-services NIS endpoint overview

Overview

NIS servers are used to authenticate user and client computers. NIS domain name and NIS server information is required to configure NIS.
It is important to note that this API is used to retrieve and manage NIS server configurations for data SVMs only. NIS configuration for the cluster is managed via /api/security/authentication/cluster/nis .

Retrieving NIS Information

The NIS GET endpoint retrieves all of the NIS configurations for data SVMs.

Examples

Retrieving all fields for all NIS configurations

```
# The API:
/api/name-services/nis

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/nis?fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domain": "domainA.example.com",
    "servers": [
      "10.10.10.10",
      "example.com"
    ],
    "bound-servers": [
      "10.10.10.10"
    ],
```

```
    "_links": {
      "self": {
        "href": "/api/name-services/nis/179d3c85-7053-11e8-b9b8-
005056b41bd1"
      }
    }
  },
  {
    "svm": {
      "uuid": "6a52023b-7066-11e8-b9b8-005056b41bd1",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6a52023b-7066-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "domain": "domainB.example.com",
    "servers": [
      "2.2.2.2",
      "3.3.3.3",
      "4.4.4.4"
    ],
    "bound-servers": [],
    "_links": {
      "self": {
        "href": "/api/name-services/nis/6a52023b-7066-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/name-services/nis?fields=*"
  }
}
}
```


Retrieving all NIS configurations whose bound servers start with *10*

```
# The API:
/api/name-services/nis

# The call:
curl -X GET "https://<mgmt-ip/api/name-services/nis?bound_servers=10*" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/179d3c85-7053-11e8-b9b8-005056b41bd1"
        }
      }
    },
    "bound-servers": [
      "10.10.10.10"
    ],
    "_links": {
      "self": {
        "href": "/api/name-services/nis/6a52023b-7066-11e8-b9b8-
005056b41bd1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/name-services/nis?bound_servers=10*"
  }
}
}
```

Retrieving the NIS configuration of a specific SVM

```
# The API:
/api/name-services/nis/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/nis/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1",
  "name": "vs1"
},
"domain": "domainA.example.com",
"servers": [
  "10.10.10.10",
  "example.com"
],
"bound_servers": [
  "10.10.10.10"
]
}
```

Creating a NIS configuration

The NIS POST endpoint creates a NIS configuration for the specified SVM.

Example

The following example shows a POST operation:

```
# The API:
/api/name-services/nis

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/nis" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"svm\": {
\"uuid\": \"179d3c85-7053-11e8-b9b8-005056b41bd1\" }, \"domain\":
\"domainA.example.com\", \"servers\": [ \"10.10.10.10\",\"example.com\"
]}"
```

Updating the NIS configuration

The NIS PATCH endpoint updates the NIS configuration for the specified NIS server.

Examples

Updating the domain

```
# The API:
/api/name-services/nis/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/nis/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"domain\": \"domainC.example.com\", \"servers\":
[ \"13.13.13.13\" ]}"
```

Updating the server

```
# The API:
/api/name-services/nis/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/nis/179d3c85-7053-11e8-
b9b8-005056b41bd1" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"servers\": [ \"14.14.14.14\" ]}"
```

Deleting a NIS configuration

The NIS DELETE endpoint deletes the NIS configuration for the specified SVM.

Example

The following example shows a DELETE operation:

```
# The API:
/api/name-services/nis/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/nis/179d3c85-7053-
11e8-b9b8-005056b41bd1" -H "accept: application/hal+json"
```

Retrieve NIS domain configurations of all SVMs

GET `/name-services/nis`

Introduced In: 9.6

Retrieves NIS domain configurations of all the SVMs. The bound_servers field indicates the successfully bound NIS servers. Lookups and authentications fail if there are no bound servers.

Related ONTAP commands

- `vserver services name-service nis-domain show`
- `vserver services name-service nis-domain show-bound`
- `vserver services name-service nis-domain show-bound-debug`

Learn more

- DOC /name-services/nis

Parameters

Name	Type	In	Required	Description
binding_details.status.code	string	query	False	Filter by binding_details.status.code • Introduced in: 9.11
binding_details.status.message	string	query	False	Filter by binding_details.status.message • Introduced in: 9.11

Name	Type	In	Required	Description
binding_details.server	string	query	False	Filter by binding_details.server • Introduced in: 9.11 • maxLength: 255 • minLength: 1
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.7
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.7
domain	string	query	False	Filter by domain • Introduced in: 9.7 • maxLength: 64 • minLength: 1
bound_servers	string	query	False	Filter by bound_servers • Introduced in: 9.7 • maxLength: 255 • minLength: 1
servers	string	query	False	Filter by servers • Introduced in: 9.7 • maxLength: 255 • minLength: 1
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of NIS domain records.
records	array[nis_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "binding_details": [
        {
          "server": "string",
          "status": {
            "code": "string",
            "message": "string"
          }
        }
      ],
      "bound_servers": [
        "string"
      ],
      "domain": "domainA.example.com",
      "servers": [
        "10.10.10.10",
        "example.com"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
```

```
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nis_service

Name	Type	Description
_links	_links	
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the NIS domain and server configuration for a data SVM

POST `/name-services/nis`

Introduced In: 9.6

Creates an NIS domain and server configuration for a data SVM.
NIS configuration for the cluster is managed via /api/security/authentication/cluster/nis .

Important notes

- Each SVM can have one NIS domain configuration.
- Multiple SVMs can be configured with the same NIS domain. Specify the NIS domain and NIS servers as input.Domain name and servers fields cannot be empty.
- Both FQDNs and IP addresses are supported for the servers field.
- IPv6 must be enabled if IPv6 family addresses are specified in the servers field.
- A maximum of ten NIS servers are supported.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the NIS configuration.
- `domain` - NIS domain to which the configuration belongs.
- `servers` - List of NIS server IP addresses.

Related ONTAP commands

- `vserver services name-service nis-domain create`

Learn more

- DOC /name-services/nis

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "domainA.example.com",
  "servers": [
    "10.10.10.10",
    "example.com"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of NIS domain records.
records	array[nis_service]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "binding_details": [
        {
          "server": "string",
          "status": {
            "code": "string",
            "message": "string"
          }
        }
      ],
      "bound_servers": [
        "string"
      ],
      "domain": "domainA.example.com",
      "servers": [
        "10.10.10.10",
        "example.com"
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966253	IPv6 is not enabled in the cluster
2621488	Invalid SVM context
2621706	The specified SVM UUID is incorrect for the specified SVM name
3276964	NIS domain name or NIS server domain is too long. The maximum supported for domain name is 64 characters and the maximum supported for NIS server domain is 255 characters
3276933	A maximum of 10 NIS servers can be configured per SVM
13434916	The SVM is in the process of being created. Wait a few minutes, and then try the command again.
23724109	DNS resolution failed for one or more specified servers
23724111	Empty NIS servers cannot be specified.
23724112	DNS resolution failed due to an internal error. Contact technical support if this issue persists
23724132	DNS resolution failed for all the specified servers
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nis_service

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the NIS domain configuration for an SVM

DELETE `/name-services/nis/{svm.uuid}`

Introduced In: 9.6

Deletes the NIS domain configuration of an SVM. NIS can be removed as a source from ns-switch if NIS is not used for lookups.

Related ONTAP commands

- `vserver services name-service nis-domain delete`

Learn more

- DOC /name-services/nis

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the NIS domain and server configurations for an SVM

GET `/name-services/nis/{svm.uuid}`

Introduced In: 9.6

Retrieves NIS domain and server configurations of an SVM. Both NIS domain and servers are displayed by default. The bound_servers field indicates the successfully bound NIS servers.

Related ONTAP commands

- `vserver services name-service nis-domain show`
- `vserver services name-service nis-domain show-bound`
- `vserver services name-service nis-domain show-bound-debug`

Learn more

- DOC /name-services/nis

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "domainA.example.com",
  "servers": [
    "10.10.10.10",
    "example.com"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the NIS domain and server configuration for an SVM

PATCH `/name-services/nis/{svm.uuid}`

Introduced In: 9.6

Updates NIS domain and server configuration of an SVM.

Important notes

- Both NIS domain and servers can be modified.
- Domains and servers cannot be empty.
- Both FQDNs and IP addresses are supported for the servers field.
- If the domain is modified, NIS servers must also be specified.
- IPv6 must be enabled if IPv6 family addresses are specified for the servers field.

Related ONTAP commands

- `vserver services name-service nis-domain modify`

Learn more

- DOC /name-services/nis

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

Example request

```
{
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "domainA.example.com",
  "servers": [
    "10.10.10.10",
    "example.com"
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966253	IPv6 is not enabled in the cluster
2621488	Invalid SVM context
2621706	The specified SVM UUID is incorrect for the specified SVM name
3276964	NIS domain name or NIS server domain is too long. The maximum supported for domain name is 64 characters and the maximum supported for NIS server domain is 255 characters
3276933	A maximum of 10 NIS servers can be configured per SVM
23724109	DNS resolution failed for one or more specified servers
23724111	Empty NIS servers cannot be specified.
23724112	DNS resolution failed due to an internal error. Contact technical support if this issue persists
23724132	DNS resolution failed for all the specified servers
23724130	Cannot use an IPv6 name server address because there are no IPv6 LIFs

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

nis_service

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage UNIX group configurations

Name-services unix-groups endpoint overview

Overview

You can use this API to display local UNIX group information and to control UNIX group configurations.

Retrieving UNIX group information

The UNIX group GET endpoint retrieves all of the local UNIX groups configurations for data SVMs.

Examples

Retrieving all of the fields for all of the UNIX group configurations

The UNIX group GET endpoint retrieves all of the local UNIX groups configurations for data SVMs.

```
# The API:
/api/name-services/unix-groups

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-groups?fields=*" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "name": "group1",
    "id": 11,
    "users": [
      {
        "name": "user1"
      },
      {
        "name": "user2"
      },
      {
        "name": "user3"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/name-services/unix-groups/b009a9e7-4081-b576-7575-
ada21efcaf16/group1"
      }
    }
  },
  {
```

```
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "name": "group2",
    "id": 12,
    "users": [
      {
        "name": "user1"
      },
      {
        "name": "user2"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/name-services/unix-groups/b009a9e7-4081-b576-7575-
ada21efcaf16/group2"
      }
    }
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcad17",
      "name": "vs2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcad17"
        }
      }
    },
    "name": "group1",
    "id": 11,
    "users": [
      {
        "name": "user2"
      },
      {
        "name": "user3"
      }
    ],
```

```
    "_links": {
      "self": {
        "href": "/api/name-services/unix-groups/b009a9e7-4081-b576-7575-
ada21efcad17/group1"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/name-services/unix-groups?fields=*"
  }
}
}
```


Retrieving all of the UNIX group configurations whose group name is 'group1'.

```
# The API:
/api/name-services/unix-groups

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-groups?name=group1"
-H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "name": "group1",
    "id": 11,
    "_links": {
      "self": {
        "href": "/api/name-services/unix-groups/b009a9e7-4081-b576-7575-
ada21efcaf16/group1"
      }
    }
  },
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/name-services/unix-groups?name=group1"
  }
}
}
```

Creating a UNIX group configuration

The UNIX group POST endpoint creates a UNIX group configuration for the specified SVM.

Example

```
# The API:
/api/name-services/unix-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/unix-groups" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d '{ "svm":
{"uuid": "179d3c85-7053-11e8-b9b8-005056b41bd1"}, "name": "group1", "id":
111}'
```

Updating a UNIX group configuration

The UNIX group PATCH endpoint updates the UNIX group ID of the specified UNIX group and the specified SVM.

Example

Modify the group ID of group1 to 112

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/unix-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/group1" -H "accept: application/hal+json" -H
"Content-Type: application/json" -d '{ "id": 112}'
```

Deleting a UNIX group configuration

The UNIX group DELETE endpoint deletes the specified UNIX group of the specified SVM.

Example

Delete the group 'group1'

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/unix-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/group1" -H "accept: application/hal+json"
```

Retrieve UNIX groups for all SVMs

GET `/name-services/unix-groups`

Introduced In: 9.9

Retrieves the UNIX groups for all of the SVMs. UNIX users who are the members of the group are also displayed.

Related ONTAP commands

- `vserver services name-service unix-group show`

Learn more

- DOC /name-services/unix-groups

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
name	string	query	False	Filter by name
id	integer	query	False	Filter by id
users.name	string	query	False	Filter by users.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
current_count	integer	Number of UNIX groups and members.
num_records	integer	Number of UNIX group records.
records	array[unix_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "group1",
      "skip_name_validation": true,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "users": [
        {
          "name": "string"
        }
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

unix_group

Name	Type	Description
_links	_links	

Name	Type	Description
id	integer	UNIX group ID of the specified user.
name	string	UNIX group name to be added to the local database.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a local UNIX group configuration for an SVM

POST `/name-services/unix-groups`

Introduced In: 9.9

Creates the local UNIX group configuration for the specified SVM.

Group name and group ID are mandatory parameters.

Important notes

- The default limit for local UNIX groups and group members is 32768.

Learn more

- DOC /name-services/unix-groups

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
id	integer	UNIX group ID of the specified user.
name	string	UNIX group name to be added to the local database.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX group name is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	

Example request

```
{
  "name": "group1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "name": "string"
    }
  ]
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621706	The specified SVM UUID is incorrect for the specified SVM name.
2621516	This operation is only supported on a data SVM.
3277025	Maximum supported limit of UNIX group count reached.
3277051	Invalid characters in group name. Valid characters are 0-9, A-Z, a-z, ".", "_" and "-". Names cannot start with "-".

Error Code	Description
23724067	Group name too long. Maximum supported length is 64 characters.
23724141	Duplicate group ID. Group ID must be unique.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

unix_group

Name	Type	Description
id	integer	UNIX group ID of the specified user.
name	string	UNIX group name to be added to the local database.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX group name is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a UNIX group configuration for an SVM

DELETE `/name-services/unix-groups/{svm.uuid}/{name}`

Introduced In: 9.9

Deletes a UNIX group configuration for the specified SVM.

Related ONTAP commands

- `vserver services name-service unix-group delete`

Learn more

- DOC /name-services/unix-groups

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve UNIX group information for a group and SVM

GET `/name-services/unix-groups/{svm.uuid}/{name}`

Introduced In: 9.9

Retrieves UNIX group information for the specified group and SVM. UNIX users who are part of this group are also retrieved.

Related ONTAP commands

- `vserver services name-service unix-group show`

Learn more

- DOC /name-services/unix-groups

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
id	integer	UNIX group ID of the specified user.
name	string	UNIX group name to be added to the local database.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "group1",
  "skip_name_validation": true,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "name": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update UNIX group information for a group in an SVM

PATCH `/name-services/unix-groups/{svm.uuid}/{name}`

Introduced In: 9.9

Updates the UNIX group information of the specified group in the specified SVM.

Learn more

- DOC /name-services/unix-groups

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX group name.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
id	integer	UNIX group ID of the specified user.
users	array[users]	

Example request

```
{
  "skip_name_validation": true,
  "users": [
    {}
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724141	Duplicate group ID. Group ID must be unique.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

unix_group

Name	Type	Description
id	integer	UNIX group ID of the specified user.
users	array[users]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage UNIX group users

Name-services unix-groups svm.uuid unix_group.name users endpoint overview

Overview

You can use this API to retrieve, add or delete UNIX users for an SVM's UNIX group.

Retrieving UNIX users from an SVM's UNIX group

The UNIX group users GET endpoint retrieves UNIX users of the specified UNIX group and the SVM.

Examples

Retrieving all users from the group 'pcuser'

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-groups/f06686a2-
c901-11eb-94b4-0050568e9f2c/pcuser/users" -H "accept:
application/hal+json"

# The response:
{
 "records": [
 {
  "svm": {
    "uuid": "f06686a2-c901-11eb-94b4-0050568e9f2c",
    "name": "svm1"
  },
  "unix_group": {
    "name": "pcuser"
  },
  "name": "user1",
  "_links": {
    "self": {
      "href": "/api/name-services/unix-groups/f06686a2-c901-11eb-94b4-
0050568e9f2c/pcuser/users/user1"
    }
  }
 }
],
 "num_records": 1,
 "_links": {
 "self": {
   "href": "/api/name-services/unix-groups/f06686a2-c901-11eb-94b4-
0050568e9f2c/pcuser/users/?fields=*"
 }
}
}
```

Retrieving user 'user1' from the group 'pcuser'

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-groups/f06686a2-
c901-11eb-94b4-0050568e9f2c/pcuser/users/user1" -H "accept:
application/hal+json"

# The response:
{
 "svm": {
 "uuid": "f06686a2-c901-11eb-94b4-0050568e9f2c",
 "name": "svm1"
 },
 "unix_group": {
 "name": "pcuser"
 },
 "name": "user1",
 "_links": {
 "self": {
   "href": "/api/name-services/unix-groups/f06686a2-c901-11eb-94b4-
0050568e9f2c/pcuser/users/user1"
 }
}
}
```

Adding users to a UNIX group

The UNIX group users POST endpoint adds UNIX users to the specified UNIX group and the SVM. Multiple users can be added in a single call using the "records" parameter.

Examples

Adding a single user to the group 'group1'

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/unix-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/group1/users" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d '{ "name":
"user4" }'
```

Adding multiple users to the group 'group1' in a single REST call

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/unix-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/group1/users" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d '{ "records":
[{"name":"user1"}, {"name":"user2"}, {"name":"user3"}]}'
```

Deleting a user from a group of a specific SVM

Example

Delete the user 'user1' from group 'group1' in SVM 'vs1'

```
# The API:
/api/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/unix-groups/179d3c85-
7053-11e8-b9b8-005056b41bd1/group1/users/user1" -H "accept:
application/hal+json"
```

Retrieve users for a UNIX group and SVM

GET `/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users`

Introduced In: 9.10

Retrieves users for the specified UNIX group and SVM.

Related ONTAP commands

- `vserver services name-service unix-group show`

Parameters

Name	Type	In	Required	Description
unix_group.name	string	path	True	UNIX group name.
name	string	query	False	Filter by name

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of UNIX user records in a given SVM and group.
records	array[unix_group_users]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "skip_name_validation": true,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "unix_group": {
        "name": "string"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

records

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_group

Name	Type	Description
name	string	UNIX group name.

unix_group_users

Name	Type	Description
_links	_links	
name	string	UNIX user who belongs to the specified UNIX group and the SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_group	unix_group	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add users to a UNIX group and SVM

POST `/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users`

Introduced In: 9.9

Adds users to the specified UNIX group and SVM.

Important notes

- Multiple users can be added in a single call using the "records" parameter.
- "records" parameter must not be specified when "name" parameter is specified.
- Specified users are appended to the existing list of users.

- Duplicate users are ignored.

Related ONTAP commands

- `vserver services name-service unix-group adduser`
- `vserver services name-service unix-group addusers`

Parameters

Name	Type	In	Required	Description
unix_group.name	string	path	True	UNIX group name.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.
records	array[records]	An array of UNIX users specified to add multiple users to a UNIX group in a single API call. Not allowed when the `name` property is used.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX user names is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_group	unix_group	

Example request

```
{
  "name": "string",
  "records": [
    {
      "name": "string"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_group": {
    "name": "string"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262179	Invalid arguments in records.
3276897	The specified UNIX group does not exist in the SVM.
3277025	Maximum supported limit of UNIX group membership count reached.

Error Code	Description
3277051	Invalid characters in user name. Valid characters are 0-9, A-Z, a-z, ".", "_" and "-". Names cannot start with "-".
23724066	User name too long. Maximum supported length is 64 characters.
23724142	"records" field must not be specified when a single user is added.
23724143	SVM UUID, UNIX group name and skip-name-validation are invalid fields for "records" parameter.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

records

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_group

Name	Type	Description
name	string	UNIX group name.

unix_group_users

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

Name	Type	Description
records	array[records]	An array of UNIX users specified to add multiple users to a UNIX group in a single API call. Not allowed when the `name` property is used.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX user names is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_group	unix_group	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a user from a UNIX group

DELETE `/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users/{name}`

Introduced In: 9.9

Deletes a user from the specified UNIX group.

Related ONTAP commands

- `vserver services name-service unix-group deluser`

Parameters

Name	Type	In	Required	Description
unix_group.name	string	path	True	UNIX group name.
name	string	path	True	UNIX user to be deleted from the group.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3276897	The specified UNIX group does not exist in the SVM.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve users for a UNIX group and SVM

GET `/name-services/unix-groups/{svm.uuid}/{unix_group.name}/users/{name}`

Introduced In: 9.10

Retrieves users for the specified UNIX group and SVM.

Related ONTAP commands

- `vserver services name-service unix-group show`

Parameters

Name	Type	In	Required	Description
unix_group.name	string	path	True	UNIX group name.
name	string	path	True	UNIX user to be retrieved from the group.
fields	array[string]	query	False	Specify the fields to return.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
name	string	UNIX user who belongs to the specified UNIX group and the SVM.
svm	svm	SVM, applies only to SVM-scoped objects.
unix_group	unix_group	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "string",
  "skip_name_validation": true,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_group": {
    "name": "string"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

records

Name	Type	Description
name	string	UNIX user who belongs to the specified UNIX group and the SVM.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_group

Name	Type	Description
name	string	UNIX group name.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage UNIX user configurations

Name-services unix-users endpoint overview

Overview

You can use this API to display local UNIX user information and to control UNIX user configurations.

Retrieving UNIX user information

You can use the UNIX user GET endpoint to retrieve all of the local UNIX user configurations for data SVMs.

Examples

Retrieving all of the fields for UNIX user configurations for all SVMs

```
# The API:
/api/name-services/unix-users

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-users?fields=*" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
```

```
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "name": "string",
    "id": 7,
    "primary_gid": 0,
    "full_name": "string"
  },
  {
    "svm": {
      "uuid": "3f479a01-2971-11eb-88e1-0050568eefd4",
      "name": "vs2"
    },
    "name": "nobody",
    "id": 65535,
    "primary_gid": 65535,
    "full_name": ""
  },
  {
    "svm": {
      "uuid": "3f479a01-2971-11eb-88e1-0050568eefd4",
      "name": "vs2"
    },
    "name": "pcuser",
    "id": 65534,
    "primary_gid": 65534,
    "full_name": ""
  },
  {
    "svm": {
      "uuid": "3f479a01-2971-11eb-88e1-0050568eefd4",
      "name": "vs2"
    },
    "name": "root",
    "id": 0,
    "primary_gid": 1,
    "full_name": ""
  }
],
"num_records": 4
}
```

Retrieving the UNIX user configuration of a specific SVM

```
# The API:
/api/name-services/unix-users

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-
users?svm.uuid=25b363a6-2971-11eb-88e1-0050568eefd4&fields=*" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
      "name": "vs1"
    },
    "name": "user1",
    "id": 1,
    "primary_gid": 1,
    "full_name": "Full User Name for user1"
  }
],
"num_records": 1
}
```

Retrieving a UNIX user configuration of a specific SVM and user

```
# The API:
/api/name-services/unix-users/{svm.uuid}/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/name-services/unix-users/25b363a6-2971-
11eb-88e1-0050568eefd4/user1" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "25b363a6-2971-11eb-88e1-0050568eefd4",
  "name": "vs1"
},
"name": "user1",
"id": 1,
"primary_gid": 1,
"full_name": "Full User Name for user1"
}
```

Creating a UNIX user configuration

The UNIX user POST endpoint creates a UNIX user configuration for the specified SVM.

Examples

Creating a UNIX user configuration with all fields specified

```
# The API:
/api/name-services/unix-users

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/unix-users" -H "accept:
application/json" -d "{ \"full_name\": \"Full user name\", \"id\": 7,
\"name\": \"user2\", \"primary_gid\": 10, \"skip_name_validation\": false,
\"svm\": { \"name\": \"vs1\", \"uuid\": \"25b363a6-2971-11eb-88e1-
0050568eefd4\" }}"
```

Creating a UNIX user configuration with only mandatory fields specified

---

```
# The API:
/api/name-services/unix-users

# The call:
curl -X POST "https://<mgmt-ip>/api/name-services/unix-users" -H "accept:
application/json" -d "{ \"id\": 8, \"name\": \"user9\", \"primary_gid\":
10, \"svm\": { \"name\": \"vs1\", \"uuid\": \"25b363a6-2971-11eb-88e1-
0050568eefd4\" }}"
```

Updating a UNIX user configuration

The UNIX user PATCH endpoint updates the UNIX user configuration for the specified user and SVM. The following example shows a PATCH operation:

```
# The API:
/api/name-services/unix-users/{svm.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/name-services/unix-users/25b363a6-
2971-11eb-88e1-0050568eefd4/user1" -H "accept: application/json" -d "{
\"full_name\": \"Full name\", \"id\": 7, \"primary_gid\": 10 }"
```

Deleting a UNIX user configuration

The UNIX user DELETE endpoint deletes the specified UNIX user for the specified SVM. The following example shows a DELETE operation:

```
# The API:
/api/name-services/unix-users/{svm.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/name-services/unix-users/25b363a6-
2971-11eb-88e1-0050568eefd4/user1" -H "accept: application/json"
```

Retrieve all UNIX users for all SVMs

GET `/name-services/unix-users`

Introduced In: 9.9

Retrieves all of the UNIX users for all of the SVMs.

Important notes

- The current UNIX users count can be retrieved from the num_records field by calling the API with the parameter "return_records=false".

Related ONTAP commands

- `vserver services name-service unix-user show`

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
primary_gid	integer	query	False	Filter by primary_gid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
full_name	string	query	False	Filter by full_name
id	integer	query	False	Filter by id
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of UNIX user records.
records	array[unix_user]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "full_name": "Full User Name for user1",
      "name": "user1",
      "skip_name_validation": true,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_user

Name	Type	Description
_links	_links	
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
name	string	UNIX user name to be added to the local database.

Name	Type	Description
primary_gid	integer	Primary group ID to which the user belongs.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a local UNIX user configuration for an SVM

POST `/name-services/unix-users`

Introduced In: 9.9

Creates the local UNIX user configuration for an SVM.

Important notes

- The default limit for local UNIX users is 32768.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
name	string	UNIX user name to be added to the local database.
primary_gid	integer	Primary group ID to which the user belongs.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX user name is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "full_name": "Full User Name for user1",
  "name": "user1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of UNIX user records.
records	array[unix_user]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "full_name": "Full User Name for user1",
      "name": "user1",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621706	The specified SVM UUID is incorrect for the specified SVM name
2621516	This operation is only supported on a data SVM
23724066	The specified UNIX user name is too long. Maximum supported length is 64 characters.
3277051	The specified UNIX user name contains invalid characters. Valid characters are 0-9, A-Z, a-z, ".", "_" and "-".

Error Code	Description
23724128	The specified UNIX user full-name contains the invalid character ':'.
23724089	The specified UNIX user full-name is too long. Maximum supported length is 256 characters.
23724055	Internal error. Failed to create the UNIX user for the SVM. Verify that the cluster is healthy, then try the command again.
23724090	Configuring individual entries is not supported because file-only configuration is enabled.
3277025	Failed to create the UNIX user for the SVM because the system limit has been reached.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_user

Name	Type	Description
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
name	string	UNIX user name to be added to the local database.
primary_gid	integer	Primary group ID to which the user belongs.
skip_name_validation	boolean	Indicates whether or not the validation for the specified UNIX user name is disabled.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a UNIX user configuration for an SVM

DELETE `/name-services/unix-users/{svm.uuid}/{name}`

Introduced In: 9.9

Deletes a UNIX user configuration for the specified SVM.

Related ONTAP commands

- `vserver services name-service unix-user delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX user name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve UNIX user information for a user and SVM

GET `/name-services/unix-users/{svm.uuid}/{name}`

Introduced In: 9.9

Retrieves UNIX user information for the specified user and SVM.

Related ONTAP commands

- `vserver services name-service unix-user show`

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX user name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
name	string	UNIX user name to be added to the local database.
primary_gid	integer	Primary group ID to which the user belongs.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "full_name": "Full User Name for user1",
  "name": "user1",
  "skip_name_validation": true,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update UNIX user information for a user and SVM

PATCH `/name-services/unix-users/{svm.uuid}/{name}`

Introduced In: 9.9

Updates UNIX user information for the specified user and SVM.

Parameters

Name	Type	In	Required	Description
name	string	path	True	UNIX user name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
primary_gid	integer	Primary group ID to which the user belongs.

Example request

```
{
  "full_name": "Full User Name for user1",
  "skip_name_validation": true
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
23724128	The specified Unix user full-name contains invalid character ':'
23724089	The specified UNIX user full-name is too long. Maximum supported length is 256 characters.
23724055	Internal error. Failed to modify the UNIX user for the SVM. Verify that the cluster is healthy, then try the command again.
23724090	Configuring individual entries is not supported because file-only configuration is enabled.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

unix_user

Name	Type	Description
full_name	string	User's full name.
id	integer	UNIX user ID of the specified user.
primary_gid	integer	Primary group ID to which the user belongs.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Networking

Networking overview

Overview

The ONTAP networking APIs enable reporting on networking information, such as IPspaces, interfaces, routes, ports, service policies and broadcast domains. Some can also be used to manage networking.

IPspaces

IPspaces enable you to configure a single ONTAP cluster so that it can be accessed by clients from more than one administratively separate network domain, even if those clients are using the same IP address subnet range. This allows for separation of client traffic for privacy and security.

An IPspace defines a distinct IP address space in which storage virtual machines (SVMs) reside. Ports and IP addresses defined for an IPspace are applicable only within that IPspace. A distinct routing table is maintained for each SVM within an IPspace, so that no cross-SVM or cross-IPspace traffic routing occurs.

Ethernet

Broadcast Domains

A broadcast domain is a set of ports which would all receive a broadcast packet that is sent from any of the ports.

By accurately representing the physical network with an ONTAP broadcast domain, ONTAP ensures that IP interfaces are able to migrate to appropriate ports in case of failure. ONTAP also ensures that characteristics, such as MTU, stay matched across all ports of the broadcast domain.

A broadcast domain resides in an IPspace, and can be used by cluster-scoped or SVM-scoped IP interfaces in that IPspace. The scope of the broadcast domain’s uniqueness is the IPspace it is in. You must create as many broadcast domains in an IPspace as there are IP subnets with interfaces in that IPspace.

Ports are mapped to an IPspace by assigning the port’s broadcast domain.

Ports

A port is a physical or virtual Ethernet network device. Physical ports may be combined into Link Aggregation Groups (LAGs, or ifgrps), or divided into Virtual LANs (VLANs).

The GET and PATCH APIs are available for all port types. The POST and DELETE APIs are available for "lag" and "vlan" port types.

A given port can host zero or more IP interfaces.

A port exists in a broadcast domain and all ports within the same broadcast domain must have layer 2 network connectivity to one another. If a port within a broadcast domain goes down, any IP interfaces hosted by that port can fail over to other ports in the same broadcast domain.

Fibre Channel

Interfaces

Fibre Channel (FC) interfaces are the logical endpoints for Fibre Channel network connections to an SVM. A Fibre Channel interface provides Fibre Channel access to storage within the interface's SVM using either Fibre Channel Protocol (FCP) or Non-Volatile Memory Express over Fibre Channel (NVMe over FC).

The Fibre Channel interface REST API allows you to create, delete, update and discover Fibre Channel interfaces and obtain status information for Fibre Channel interfaces.

A Fibre Channel interface is created on a Fibre Channel port that is located on a cluster node. The Fibre Channel port must be specified to identify the location of the interface for a POST or PATCH that relocates an interface. You can identify the port by either supplying the node and port names or the port UUID.

Ports

Fibre Channel ports are the physical ports of Fibre Channel adapters on ONTAP cluster nodes that can be connected to Fibre Channel networks to provide Fibre Channel network connectivity. A Fibre Channel port defines the location of a Fibre Channel interface within the ONTAP cluster.

The Fibre Channel port REST API allows you to discover Fibre Channel ports, obtain status information for Fibre Channel ports, and configure Fibre Channel port properties.

Learn More

- *Fibre Channel Logins* found in both the *SAN* and *NVMe* sections. Fibre Channel logins represent connections formed by Fibre Channel initiators that have successfully logged in to ONTAP.

IP

Interfaces

An interface (also referred to as a *LIF* in ONTAP documentation) represents a network access point to a node in a cluster. In other words, an interface is essentially an IPv4 or IPv6 address with associated attributes.

IP interfaces are configured on ports to send and receive communications over the network. The port that will host the interface can either be explicitly specified using node and/or port fields or implicitly specified using a

broadcast domain.

The IPspace of the interface is required for cluster-scoped interfaces. The SVM owning the interface is required for SVM-scoped interfaces. These interfaces are in the SVM's IPspace.

The service policy of an interface defines what network services are provided by the interface.

Routes

Routes indicate which IPv4 or IPv6 gateway to use to communicate with hosts that are not on the local subnet. Typically, an IP interface (or LIF) can only use a gateway if it has the same address family and is in the LIF's subnet.

It is important that every gateway address belongs to a physical or virtual router that has connectivity to the specified destination network.

SVM-scoped routes can only be used by IP interfaces of the specified SVM. Likewise, cluster-scoped routes can only be used by cluster-scoped IP interfaces in the specified IPspace.

Service Policies

Service policies are named groupings that define what services are supported by an IP interface. These include both built-in service policies (for example: default-data-files or default-management) and custom service policies.

Service policies are scoped to either an SVM or IPspace.

Manage broadcast domains

Network Ethernet broadcast-domains endpoint overview

Overview

A broadcast domain is a collection of Ethernet ports that have layer 2 connectivity. They are used to determine which Ethernet ports can host interfaces of various types. The broadcast domain REST API allows you to retrieve, create, modify, and delete broadcast domains. The broadcast domain APIs do not manage port membership. To add a port to a broadcast domain or to move a port to a different broadcast domain, use PATCH /network/ethernet/ports/<uuid>.</uuid>

Retrieving network Ethernet broadcast domain information

The broadcast domains GET API retrieves and displays relevant information pertaining to the broadcast domains configured in the cluster. The API retrieves the list of all broadcast domains configured in the cluster, or a specific broadcast domain.

Examples

Retrieving all broadcast domains in the cluster

The following output shows the list of all broadcast domains configured in a cluster.

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/broadcast-domains" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "6970c2a9-f34f-11e8-8373-005056bb6b85",
    "name": "Cluster",
    "ipspace": {
      "uuid": "6267eff8-f34f-11e8-8373-005056bb6b85",
      "name": "Cluster",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/6267eff8-f34f-11e8-8373-
005056bb6b85"
        }
      }
    },
    "ports": [
      {
        "uuid": "626b4d19-f34f-11e8-8373-005056bb6b85",
        "name": "e0a",
        "node": {
          "name": "examplecluster-node01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/626b4d19-f34f-11e8-8373-
005056bb6b85"
          }
        }
      },
      {
        "uuid": "626b77b9-f34f-11e8-8373-005056bb6b85",
        "name": "e0b",
        "node": {
          "name": "examplecluster-node01"
        },
        "_links": {
          "self": {
```

```
            "href": "/api/network/ethernet/ports/626b77b9-f34f-11e8-8373-
005056bb6b85"
          }
        }
      }
    ],
    "mtu": 9000,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/6970c2a9-f34f-
11e8-8373-005056bb6b85"
      }
    }
  },
  {
    "uuid": "6972416c-f34f-11e8-8373-005056bb6b85",
    "name": "Default",
    "ipspace": {
      "uuid": "5f650349-f34f-11e8-8373-005056bb6b85",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/5f650349-f34f-11e8-8373-
005056bb6b85"
        }
      }
    },
    "ports": [
      {
        "uuid": "626bae19-f34f-11e8-8373-005056bb6b85",
        "name": "e0c",
        "node": {
          "name": "examplecluster-node01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/626bae19-f34f-11e8-8373-
005056bb6b85"
          }
        }
      },
      {
        "uuid": "626bd677-f34f-11e8-8373-005056bb6b85",
        "name": "e0d",
        "node": {
          "name": "examplecluster-node01"
```

```
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/626bd677-f34f-11e8-8373-
005056bb6b85"
          }
        }
      }
    ],
    "mtu": 1500,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/6972416c-f34f-
11e8-8373-005056bb6b85"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains?fields=*"
  }
}
}
```

Retrieving a specific broadcast domain

The following output shows the response returned when a specific broadcast domain is requested. The system returns an error if there is no broadcast domain with the requested UUID.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/4475a2c8-f8a0-11e8-8d33-005056bb986f/?fields=*" -H "accept:
application/hal+json"

# The response:
{
"uuid": "4475a2c8-f8a0-11e8-8d33-005056bb986f",
"name": "Cluster",
```

```
"ipspace": {
  "uuid": "3e518ed5-f8a0-11e8-8d33-005056bb986f",
  "name": "Cluster",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/3e518ed5-f8a0-11e8-8d33-005056bb986f"
    }
  }
},
"ports": [
  {
    "uuid": "3e539a62-f8a0-11e8-8d33-005056bb986f",
    "name": "e0a",
    "node": {
      "name": "examplecluster-node01"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/3e539a62-f8a0-11e8-8d33-
005056bb986f"
      }
    }
  },
  {
    "uuid": "3e53c94a-f8a0-11e8-8d33-005056bb986f",
    "name": "e0b",
    "node": {
      "name": "examplecluster-node01"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/3e53c94a-f8a0-11e8-8d33-
005056bb986f"
      }
    }
  }
],
"mtu": 9000,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains/4475a2c8-f8a0-11e8-
8d33-005056bb986f/"
  }
}
}
```

Retrieving all broadcast domains with a specific name

The following output shows the response returned when broadcast domains with a specific name in any IPspace are requested.

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X GET "https://10.224.87.121/api/network/ethernet/broadcast-
domains/?name=bd1" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "66b607e5-4bee-11e9-af6a-005056bb13c0",
    "name": "bd1",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/66b607e5-4bee-
11e9-af6a-005056bb13c0"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains/?name=bd1"
  }
}
}
```

Retrieving the broadcast domains for an IPspace

The following output shows the response returned when the broadcast domains for a specified IPspace are requested.

```
# The API:
/api/network/ethernet/broadcast-domains
```

```
# The call:
curl -X GET "https://10.224.87.121/api/network/ethernet/broadcast-
domains/?ipspace.name=Cluster&fields=*" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "ae69070c-4bed-11e9-af6a-005056bb13c0",
    "name": "Cluster",
    "ipspace": {
      "uuid": "ac466a88-4bed-11e9-af6a-005056bb13c0",
      "name": "Cluster",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/ac466a88-4bed-11e9-af6a-
005056bb13c0"
        }
      }
    },
    "ports": [
      {
        "uuid": "acd67884-4bed-11e9-af6a-005056bb13c0",
        "name": "e0a",
        "node": {
          "name": "examplecluster-node-1"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/acd67884-4bed-11e9-af6a-
005056bb13c0"
          }
        }
      },
      {
        "uuid": "ace1a36f-4bed-11e9-af6a-005056bb13c0",
        "name": "e0b",
        "node": {
          "name": "examplecluster-node-1"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/ace1a36f-4bed-11e9-af6a-
005056bb13c0"
          }
```

```
        }
      }
    ],
    "mtu": 1500,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/ae69070c-4bed-
11e9-af6a-005056bb13c0"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-
domains/?ipspace.name=Cluster&fields=*"
  }
}
}
```


Creating network Ethernet broadcast domains

You can use the POST API to create broadcast domains.

Example

Creating a new broadcast domain

The following example shows how to create a broadcast domain with a name of 'bd1' and an MTU of 1500.

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains?return_records=true" -H "accept: application/hal+json" -d '{
"name": "bd1", "mtu": 1500 }'

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "bd1",
    "mtu": 1500,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/"
      }
    }
  }
]
}
```

Updating network Ethernet broadcast domains

You can use the PATCH API to update the attributes of broadcast domains.

Examples

Updating the name and MTU of a specific broadcast domain

The following example shows how the PATCH request changes the broadcast domain name to 'bd2' and the broadcast domain MTU to 9000.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/6cde03b2-f8a2-11e8-8d33-005056bb986f/" -d '{ "name": "bd2", "mtu":
9000 }'
{
}
```

Updating the IPspace of a specific broadcast domain

The following example shows how the PATCH request changes the IPspace of a broadcast domain to 'ipspace2'.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/c6fe2541-61f4-11e9-a66e-005056bbe83e" -d '{ "ipspace" : { "name" :
"ipspace2" } }'
{
}
```

Deleting network Ethernet broadcast domains

You can use the DELETE API to delete a broadcast domain from the cluster configuration.

Example

Deleting a specific broadcast domain

The following DELETE request deletes a broadcast domain.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/6cde03b2-f8a2-11e8-8d33-005056bb986f/"
```

Retrieve broadcast domains for the entire cluster

GET `/network/ethernet/broadcast-domains`

Introduced In: 9.6

Retrieves a collection of broadcast domains for the entire cluster.

Related ONTAP commands

- `network port broadcast-domain show`

Parameters

Name	Type	In	Required	Description
mtu	integer	query	False	Filter by mtu • Min value: 68
uuid	string	query	False	Filter by uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ports.name	string	query	False	Filter by ports.name
ports.uuid	string	query	False	Filter by ports.uuid
ports.node.name	string	query	False	Filter by ports.node.name
name	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Min value: 0 • Default value: 1 • Max value: 120
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[broadcast_domain]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "mtu": 1500,
      "name": "bd1",
      "ports": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
```

```
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

broadcast_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

Name	Type	Description
_links	_links	
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new broadcast domain

POST `/network/ethernet/broadcast-domains`

Introduced In: 9.6

Creates a new broadcast domain.

Required properties

- `name` - Name of the broadcast-domain to create.
- `mtu` - Maximum transmission unit (MTU) of the broadcast domain.

Recommended optional properties

- `ipspace.name` or `ipspace.uuid` - IPspace the broadcast domain belongs to.

Default property values

If not specified in POST, the following default property values are assigned:

- `ipspace` - *Default*

Related ONTAP commands

- `network port broadcast-domain create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain

Name	Type	Description
uuid	string	Broadcast domain UUID

Example request

```
{
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": [
    {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1377267	The specified IPspace does not exist.
1377596	The Cluster IPspace cannot contain more than one broadcast domain. Modifying the system IPspace Cluster is not supported.
1966460	The provided MTU was either too large or too small.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967102	A POST operation might have left the configuration in an inconsistent state. Check the configuration.
1967104	Invalid IPspace UUID.
53281982	The specified broadcast domain name is reserved by the system.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

Name	Type	Description
name	string	
node	node	
uuid	string	

broadcast_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

Name	Type	Description
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a broadcast domain

DELETE `/network/ethernet/broadcast-domains/{uuid}`

Introduced In: 9.6

Deletes a broadcast domain.

Related ONTAP commands

- `network port broadcast-domain delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Broadcast domain UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1967103	A broadcast domain with ports cannot be deleted.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve broadcast domain details

GET `/network/ethernet/broadcast-domains/{uuid}`

Introduced In: 9.6

Retrieves details of a broadcast domain.

Related ONTAP commands

- `network port broadcast-domain show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Broadcast domain UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update broadcast domain properties

PATCH `/network/ethernet/broadcast-domains/{uuid}`

Introduced In: 9.6

Updates the properties of a broadcast domain.

Related ONTAP commands

- `network port broadcast-domain modify`
- `network port broadcast-domain rename`
- `network port broadcast-domain move`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Broadcast domain UUID

Request Body

Name	Type	Description
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

Example request

```
{
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": [
    {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376484	Cannot change the MTU of a VLAN to be greater than the MTU of the port hosting it.
1377267	The specified IPspace does not exist.
1377269	Failed to lookup the specified IPspace.
1377560	Broadcast domain already exists in specified IPspace.
1377575	Remove associated subnets before deleting this broadcast domain.
1377605	Moving the system-generated broadcast domain to another IPspace is not supported.
1377609	Updates are partially complete. Updating broadcast domain attributes on some or all of the ports in the broadcast domain have failed.
1966460	The specified MTU is either too large or too small.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967150	The specified ipspace.uuid is not valid.
1967151	The specified ipspace.uuid and ipspace.name do not match.
1967152	Patching IPspace for a broadcast domain requires an effective cluster version of 9.7 or later.
53280884	The MTU of the broadcast domain cannot be modified on this platform.
53282013	Broadcast domain cannot be renamed because the name is reserved by the system.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

Name	Type	Description
name	string	
node	node	
uuid	string	

broadcast_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

Name	Type	Description
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network Ethernet ports

Network Ethernet ports endpoint overview

Overview

A port is a physical or virtual Ethernet network device. Physical ports may be combined into Link Aggregation Groups (LAGs or ifgrps), or divided into Virtual LANs (VLANs).

GET (collection), GET (instance), and PATCH APIs are available for all port types. POST and DELETE APIs are available for "lag" (ifgrp) and "vlan" port types.

Retrieving network port information

The network ports GET API retrieves and displays relevant information pertaining to the ports configured in the cluster. The API retrieves the list of all ports configured in the cluster, or specifically requested ports. The fields returned in the response vary for different ports and configurations.

Examples

Retrieving all ports in the cluster

The following output displays the UUID, name, and port type for all ports configured in a 2-node cluster. The port types are physical, vlan, lag (ifgrp), and p-vlan (available in select environments only).

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ethernet/ports?fields=uuid,name,type" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "2d2c90c0-f70d-11e8-b145-005056bb5b8e",
    "name": "e0a",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d2c90c0-f70d-11e8-b145-
005056bb5b8e"
      }
    }
  },
  {
    "uuid": "2d3004da-f70d-11e8-b145-005056bb5b8e",
    "name": "e0b",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d3004da-f70d-11e8-b145-
005056bb5b8e"
      }
    }
  },
  {
    "uuid": "2d34a2cb-f70d-11e8-b145-005056bb5b8e",
    "name": "e0c",
    "type": "physical",
    "_links": {
```

```
      "self": {
        "href": "/api/network/ethernet/ports/2d34a2cb-f70d-11e8-b145-
005056bb5b8e"
      }
    }
  },
  {
    "uuid": "2d37189f-f70d-11e8-b145-005056bb5b8e",
    "name": "e0d",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d37189f-f70d-11e8-b145-
005056bb5b8e"
      }
    }
  },
  {
    "uuid": "35de5d8b-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0a",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35de5d8b-f70d-11e8-abdf-
005056bb7fc8"
      }
    }
  },
  {
    "uuid": "35de78cc-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0b",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35de78cc-f70d-11e8-abdf-
005056bb7fc8"
      }
    }
  },
  {
    "uuid": "35dead3c-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0c",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35dead3c-f70d-11e8-abdf-
```

```
005056bb7fc8"
      }
    }
  },
  {
    "uuid": "35deda90-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0d",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35deda90-f70d-11e8-abdf-
005056bb7fc8"
      }
    }
  },
  {
    "uuid": "42e25145-f97d-11e8-ade9-005056bb7fc8",
    "name": "e0c-100",
    "type": "vlan",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/42e25145-f97d-11e8-ade9-
005056bb7fc8"
      }
    }
  },
  {
    "uuid": "569e0abd-f97d-11e8-ade9-005056bb7fc8",
    "name": "a0a",
    "type": "lag",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/569e0abd-f97d-11e8-ade9-
005056bb7fc8"
      }
    }
  }
],
"num_records": 10,
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports?fields=uuid,name,type"
  }
}
}
```

Retrieving a specific physical port

The following output displays the response when a specific physical port is requested. The system returns an error when there is no port with the requested UUID. Also, the "speed" field for the physical port is set only if the state of the port is up.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/2d37189f-f70d-
11e8-b145-005056bb5b8e?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "2d37189f-f70d-11e8-b145-005056bb5b8e",
"name": "e0d",
"mac_address": "00:50:56:bb:62:2d",
"type": "physical",
"node": {
  "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
  "name": "user-cluster-01",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-005056bb5b8e"
    }
  }
},
"broadcast_domain": {
  "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
  "name": "Default",
  "ipspace": {
    "name": "Default"
  },
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-
b145-005056bb5b8e"
    }
  }
},
"enabled": true,
"state": "up",
"mtu": 1500,
"speed": 1000,
```

```
"reachability": "not_repairable",
"reachable_broadcast_domains": [
  {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-
11e8-b145-005056bb5b8e"
      }
    }
  },
  {
    "uuid": "df640ccf-72c4-11ea-b31d-005056bbfb29",
    "name": "Default-1",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/df640ccf-72c4-
11ea-b31d-005056bbfb29"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/2d37189f-f70d-11e8-b145-
005056bb5b8e"
  }
}
}
```


Retrieving a specific VLAN port

The following output displays the response when a specific VLAN port is requested. The system returns an error when there is no port with the requested UUID. Also, the "speed" field for a VLAN port is always set to zero if the state of the port is up. If the state of the port is down, the "speed" field is unset and not reported back.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/42e25145-f97d-
11e8-ade9-005056bb7fc8?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "42e25145-f97d-11e8-ade9-005056bb7fc8",
"name": "e0e-100",
"mac_address": "00:50:56:bb:52:2f",
"type": "vlan",
"node": {
  "uuid": "6042cf47-f70c-11e8-abdf-005056bb7fc8",
  "name": "user-cluster-02",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/6042cf47-f70c-11e8-abdf-005056bb7fc8"
    }
  }
},
"broadcast_domain": {
  "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
  "name": "Default",
  "ipspace": {
    "name": "Default"
  },
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-
b145-005056bb5b8e"
    }
  }
},
"enabled": true,
"state": "up",
"mtu": 1500,
"speed": 0,
"reachability": "ok",
"reachable_broadcast_domains": [
  {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
```

```
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-
11e8-b145-005056bb5b8e"
      }
    }
  }
],
"vlan": {
  "tag": 100,
  "base_port": {
    "uuid": "35deff03-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0e",
    "node": {
      "name": "user-cluster-02"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35deff03-f70d-11e8-abdf-
005056bb7fc8"
      }
    }
  }
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/42e25145-f97d-11e8-ade9-
005056bb7fc8"
  }
}
}
```


Retrieving a specific LAG port

The following output displays the response when a specific LAG port is requested. The system returns an error when there is no port with the requested UUID. The "lag.active_ports" field is set only if the state of the port is up. Also, the "speed" field for a LAG port is always set to zero if the state of the port is up. If the state of the port is down, the "speed" field is unset and not reported back.

```
# The API:
/api/network/ethernet/ports/{uuid}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/569e0abd-f97d-
11e8-ade9-005056bb7fc8?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "569e0abd-f97d-11e8-ade9-005056bb7fc8",
"name": "a0a",
"mac_address": "02:50:56:bb:7f:c8",
"type": "lag",
"node": {
  "uuid": "6042cf47-f70c-11e8-abdf-005056bb7fc8",
  "name": "user-cluster-02",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/6042cf47-f70c-11e8-abdf-005056bb7fc8"
    }
  }
},
"broadcast_domain": {
  "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
  "name": "Default",
  "ipspace": {
    "name": "Default"
  },
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-
b145-005056bb5b8e"
    }
  }
},
"enabled": true,
"state": "up",
"mtu": 1500,
"speed": 0,
"reachability": "repairable",
"reachable_broadcast_domains": [
  {
    "uuid": "c7934b4f-691f-11ea-87fd-005056bb1ad3",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
```

```
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/c7934b4f-691f-
11ea-87fd-005056bb1ad3"
      }
    }
  }
],
"lag": {
  "mode": "singlemode",
  "distribution_policy": "mac",
  "member_ports": [
    {
      "uuid": "35df318d-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0f",
      "node": {
        "name": "user-cluster-02"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df318d-f70d-11e8-abdf-
005056bb7fc8"
        }
      }
    },
    {
      "uuid": "35df5bad-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0g",
      "node": {
        "name": "user-cluster-02"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df5bad-f70d-11e8-abdf-
005056bb7fc8"
        }
      }
    },
    {
      "uuid": "35df9926-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0h",
      "node": {
        "name": "user-cluster-02"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df9926-f70d-11e8-abdf-
```

```
005056bb7fc8"
        }
      }
    }
  ],
  "active_ports": [
    {
      "uuid": "35df318d-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0f",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df318d-f70d-11e8-abdf-
005056bb7fc8"
        }
      }
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/569e0abd-f97d-11e8-ade9-
005056bb7fc8"
  }
}
}
```

Retrieving all LAG (ifgrp) ports in the cluster

This command retrieves all LAG ports in the cluster (that is, all ports with type=LAG). The example shows how to filter a GET collection based on type.

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ethernet/ports?type=lag&node.name=user-cluster-
01&fields=name,enabled,speed,mtu" -H  "accept: application/hal+json"

# The response:
{
"records": [
  {
```

```
    "uuid": "0c226db0-4b63-11e9-8113-005056bbe040",
    "name": "a0b",
    "type": "lag",
    "node": {
      "name": "user-cluster-01"
    },
    "enabled": true,
    "mtu": 1500,
    "speed": 0,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/0c226db0-4b63-11e9-8113-
005056bbe040"
      }
    }
  },
  {
    "uuid": "d3a84153-4b3f-11e9-a00d-005056bbe040",
    "name": "a0a",
    "type": "lag",
    "node": {
      "name": "user-cluster-01"
    },
    "enabled": true,
    "mtu": 1500,
    "speed": 0,
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/d3a84153-4b3f-11e9-a00d-
005056bbe040"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href":
"/api/network/ethernet/ports?fields=name,enabled,speed,mtu&type=lag&node.n
ame=user-cluster-01"
  }
}
}
```

Creating VLAN and LAG ports

You can use the network ports POST API to create VLAN and LAG ports. If you supply the optional broadcast domain property, the specified broadcast domain will be assigned to the new port immediately. Otherwise, within a few minutes automatic probing will determine the correct broadcast domain and will assign it to the port. During that period of time, the port will not be capable of hosting interfaces.

Examples

Creating a VLAN port

The following output displays the record returned after the creation of a VLAN port on "e0e" and VLAN tag "100".

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"type\":
\"vlan\", \"node\": { \"name\": \"user-cluster-01\" }, \"enabled\": true,
\"vlan\": { \"tag\": 100, \"base_port\": { \"name\": \"e0e\", \"node\": {
\"name\": \"user-cluster-01\" } } }}"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "88b2f682-fa42-11e8-a6d7-005056bb5b8e",
    "type": "vlan",
    "node": {
      "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
      "name": "user-cluster-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-
005056bb5b8e"
        }
      }
    },
    "enabled": true,
    "vlan": {
      "tag": 100,
```

```
      "base_port": {
        "uuid": "2d39df72-f70d-11e8-b145-005056bb5b8e",
        "name": "e0e",
        "node": {
          "name": "user-cluster-01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/2d39df72-f70d-11e8-b145-
005056bb5b8e"
          }
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/88b2f682-fa42-11e8-a6d7-
005056bb5b8e"
      }
    }
  }
]
}
```

Creating a VLAN port in a specific broadcast domain

The following output displays the record returned after the creation of a VLAN port on "e0e" and VLAN tag "100". Also, the VLAN port is added to the "Default" broadcast domain in the "Default" IPspace.

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"type\": \"vlan\", \"node\": { \"name\": \"user-cluster-01\" },
\"broadcast_domain\": { \"name\": \"Default\", \"ipspace\": { \"name\":
\"Default    \" } }, \"enabled\": true, \"vlan\": { \"tag\": 100,
\"base_port\": { \"name\": \"e0e\", \"node\": { \"name\": \"user-cluster-
01\" } } }}"

# The response:
```

```
{
"num_records": 1,
"records": [
  {
    "uuid": "88b2f682-fa42-11e8-a6d7-005056bb5b8e",
    "type": "vlan",
    "node": {
      "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
      "name": "user-cluster-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-
005056bb5b8e"
        }
      }
    },
    "broadcast_domain": {
      "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
      "name": "Default",
      "ipspace": {
        "name": "Default"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-
11e8-b145-005056bb5b8e"
        }
      }
    },
    "enabled": true,
    "vlan": {
      "tag": 100,
      "base_port": {
        "uuid": "2d39df72-f70d-11e8-b145-005056bb5b8e",
        "name": "e0e",
        "node": {
          "name": "user-cluster-01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/2d39df72-f70d-11e8-b145-
005056bb5b8e"
          }
        }
      }
    },
```

```
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/88b2f682-fa42-11e8-a6d7-
005056bb5b8e"
      }
    }
  }
]
}
```

Creating a LAG (ifgrp) port

The following output displays the record returned after the creation of a LAG port with "e0f", "e0g" and "e0h" as member ports.

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{  \"type\":
\"lag\",  \"node\": { \"name\": \"user-cluster-01\"  }, \"enabled\": true,
\"lag\": { \"mode\": \"singlemode\", \"distribution_policy\": \"mac\",
\"member_ports\": [ { \"name\": \"e0f\", \"node\": { \"name\": \"user-
cluster-01\" } }, { \"name\": \"e0g\", \"node\": { \"name\": \"user-
cluster-01\" }}, { \"name\": \"e0h\", \"node\": { \"name\": \"user-
cluster-01\" } } ]  } }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "1807772a-fa4d-11e8-a6d7-005056bb5b8e",
    "type": "lag",
    "node": {
      "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
      "name": "user-cluster-01"
    },
    "enabled": true,
    "lag": {
      "mode": "singlemode",
```

```
      "distribution_policy": "mac",
      "member_ports": [
        {
          "uuid": "2d3c9adc-f70d-11e8-b145-005056bb5b8e",
          "name": "e0f",
          "node": {
            "name": "user-cluster-01"
          }
        },
        {
          "uuid": "2d40b097-f70d-11e8-b145-005056bb5b8e",
          "name": "e0g",
          "node": {
            "name": "user-cluster-01"
          }
        },
        {
          "uuid": "2d46d01e-f70d-11e8-b145-005056bb5b8e",
          "name": "e0h",
          "node": {
            "name": "user-cluster-01"
          }
        }
      ]
    }
  }
]
}
```


Creating a LAG (ifgrp) port in a specific broadcast domain

The following output displays the record returned after the creation of a LAG port with "e0f", "e0g" and "e0h" as member ports. Also, the LAG port is added to the "Default" broadcast domain in the "Default" IPspace.

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{  \"type\":
\"lag\",  \"node\": { \"name\": \"user-cluster-01\"  },
\"broadcast_domain\": { \"name\": \"Default\", \"ipspace\": { \"name\":
```

```
\"Default\" } }, \"enabled\": true, \"lag\": { \"mode\": \"singlemode\",
\"distribution_policy\": \"mac\", \"member_ports\": [ { \"name\": \"e0f\",
\"node\": { \"name\": \"user-cluster-01\" } }, { \"name\": \"e0g\",
\"node\": { \"name\": \"user-cluster-01\" }}, { \"name\": \"e0h\",
\"node\": { \"name\": \"user-cluster-01\" } } ]  } }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "1807772a-fa4d-11e8-a6d7-005056bb5b8e",
    "type": "lag",
    "node": {
      "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
      "name": "user-cluster-01"
    },
    "broadcast_domain": {
      "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
      "name": "Default",
      "ipspace": {
        "name": "Default"
      }
    },
    "enabled": true,
    "lag": {
      "mode": "singlemode",
      "distribution_policy": "mac",
      "member_ports": [
        {
          "uuid": "2d3c9adc-f70d-11e8-b145-005056bb5b8e",
          "name": "e0f",
          "node": {
            "name": "user-cluster-01"
          }
        },
        {
          "uuid": "2d40b097-f70d-11e8-b145-005056bb5b8e",
          "name": "e0g",
          "node": {
            "name": "user-cluster-01"
          }
        },
        {
          "uuid": "2d46d01e-f70d-11e8-b145-005056bb5b8e",
          "name": "e0h",
```

```
            "node": {
              "name": "user-cluster-01"
            }
          }
        ]
      }
    }
  ]
  }
```

Updating ports

You can use the network ports PATCH API to update the attributes of ports.

Examples

Updating the broadcast domain of a port

The following PATCH request removes the port from the current broadcast domain and adds it to the specified broadcast domain.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/6867efaf-d702-
11e8-994f-005056bbc994" -H  "accept: application/hal+json" -H  "Content-
Type: application/json" -d "{ \"broadcast_domain\": { \"name\":
\"Default\", \"ipspace\": { \"name\": \"Default\" }}}"
```

Updating the admin status of a port

The following PATCH request brings the specified port down.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/51d3ab39-d86d-
11e8-aca6-005056bbc994" -H  "accept: application/hal+json" -H  "Content-
Type: application/json" -d "{ \"enabled\": \"false\" }"
```

Repairing a port

The following PATCH request repairs a port. Only ports that have reachability as "repairable" can be repaired. The "reachability" parameter cannot be patched in the same request as other parameters that might affect the target port's reachability status.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/51d3ab39-d86d-
11e8-aca6-005056bbc994" -H  "accept: application/hal+json" -H  "Content-
Type: application/json" -d "{ \"reachability\": \"ok\" }"
```

Deleting ports

You can use the network ports DELETE API to delete VLAN and LAG ports in the cluster. Note that physical ports cannot be deleted.
Deleting a port also removes the port from the broadcast domain.

Example

Deleting a VLAN port

The network ports DELETE API is used to delete a VLAN port.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ethernet/ports/6867efaf-
d702-11e8-994f-005056bbc994" -H  "accept: application/hal+json" -H
"Content-Type: application/json"
```

Retrieve ports

GET `/network/ethernet/ports`

Introduced In: 9.6

Retrieves a collection of ports (physical, VLAN and LAG) for an entire cluster.

Related ONTAP commands

- `network port show`
- `network port ifgrp show`
- `network port vlan show`

Parameters

Name	Type	In	Required	Description
interface_count	integer	query	False	Filter by interface_count • Introduced in: 9.11
enabled	boolean	query	False	Filter by enabled
type	string	query	False	Filter by type
mac_address	string	query	False	Filter by mac_address
vlan.tag	integer	query	False	Filter by vlan.tag • Max value: 4094 • Min value: 1

Name	Type	In	Required	Description
vlan.base_port.name	string	query	False	Filter by vlan.base_port.name
vlan.base_port.uuid	string	query	False	Filter by vlan.base_port.uuid
vlan.base_port.node.name	string	query	False	Filter by vlan.base_port.node.name
uuid	string	query	False	Filter by uuid
name	string	query	False	Filter by name
reachable_broadcast_domains.uuid	string	query	False	Filter by reachable_broadcast_domains.uuid • Introduced in: 9.8
reachable_broadcast_domains.ipspace.name	string	query	False	Filter by reachable_broadcast_domains.ipspace.name • Introduced in: 9.8
reachable_broadcast_domains.name	string	query	False	Filter by reachable_broadcast_domains.name • Introduced in: 9.8
flowcontrol_admin	string	query	False	Filter by flowcontrol_admin • Introduced in: 9.16
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8

Name	Type	In	Required	Description
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
speed	integer	query	False	Filter by speed
broadcast_domain.uuid	string	query	False	Filter by broadcast_domain.uuid
broadcast_domain.ipspace.name	string	query	False	Filter by broadcast_domain.ipspace.name

Name	Type	In	Required	Description
broadcast_domain.name	string	query	False	Filter by broadcast_domain.name
rdma_protocols	string	query	False	Filter by rdma_protocols • Introduced in: 9.10
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.device.transmit_raw.discards	integer	query	False	Filter by statistics.device.transmit_raw.discards • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.device.transmit_raw.errors	integer	query	False	Filter by statistics.device.transmit_raw.errors • Introduced in: 9.8
statistics.device.transmit_raw.packets	integer	query	False	Filter by statistics.device.transmit_raw.packets • Introduced in: 9.8
statistics.device.receive_raw.discards	integer	query	False	Filter by statistics.device.receive_raw.discards • Introduced in: 9.8
statistics.device.receive_raw.errors	integer	query	False	Filter by statistics.device.receive_raw.errors • Introduced in: 9.8
statistics.device.receive_raw.packets	integer	query	False	Filter by statistics.device.receive_raw.packets • Introduced in: 9.8
statistics.device.link_down_count_raw	integer	query	False	Filter by statistics.device.link_down_count_raw • Introduced in: 9.8
statistics.device.timestamp	string	query	False	Filter by statistics.device.timestamp • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
reachability	string	query	False	Filter by reachability • Introduced in: 9.8
state	string	query	False	Filter by state
discovered_devices.remote_port	string	query	False	Filter by discovered_devices.remote_port • Introduced in: 9.11
discovered_devices.system_name	string	query	False	Filter by discovered_devices.system_name • Introduced in: 9.11
discovered_devices.ip_addresses	string	query	False	Filter by discovered_devices.ip_addresses • Introduced in: 9.11
discovered_devices.name	string	query	False	Filter by discovered_devices.name • Introduced in: 9.11
discovered_devices.platform	string	query	False	Filter by discovered_devices.platform • Introduced in: 9.11

Name	Type	In	Required	Description
discovered_devices.chassis_id	string	query	False	Filter by discovered_devices.chassis_id • Introduced in: 9.11
discovered_devices.remaining_hold_time	integer	query	False	Filter by discovered_devices.remaining_hold_time • Introduced in: 9.11
discovered_devices.version	string	query	False	Filter by discovered_devices.version • Introduced in: 9.11
discovered_devices.capabilities	string	query	False	Filter by discovered_devices.capabilities • Introduced in: 9.11
discovered_devices.protocol	string	query	False	Filter by discovered_devices.protocol • Introduced in: 9.11
lag.active_ports.name	string	query	False	Filter by lag.active_ports.name
lag.active_ports.uuid	string	query	False	Filter by lag.active_ports.uuid
lag.active_ports.node.name	string	query	False	Filter by lag.active_ports.node.name

Name	Type	In	Required	Description
lag.member_ports.name	string	query	False	Filter by lag.member_ports.name
lag.member_ports.uuid	string	query	False	Filter by lag.member_ports.uuid
lag.member_ports.node.name	string	query	False	Filter by lag.member_ports.node.name
lag.mode	string	query	False	Filter by lag.mode
lag.distribution_policy	string	query	False	Filter by lag.distribution_policy
pfc_queues_admin	integer	query	False	Filter by pfc_queues_admin • Introduced in: 9.16 • Max value: 7 • Min value: 0
mtu	integer	query	False	Filter by mtu • Min value: 68
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[port]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "broadcast_domain": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ipspace": {
          "name": "ipspace1"
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "discovered_devices": [
        {
          "capabilities": [
            "router",
            "switch"
          ],
          "chassis_id": "string",
          "ip_addresses": [
            "192.168.100.24",
            "192.168.100.26"
          ],
          "name": "ETY-R1S4-510Q13.datacenter.example.com",
          "platform": "93180YC-EX",
          "protocol": "cdp",
          "remote_port": "FastEthernet0/12",
```

```
          "system_name": "string",
          "version": "Cisco Nexus Operating System (NX-OS) Software,
Version 8.1"
        }
      ],
      "flowcontrol_admin": "string",
      "interface_count": 0,
      "lag": {
        "active_ports": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "e1b",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "distribution_policy": "string",
        "member_ports": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "e1b",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "mode": "string"
      },
      "mac_address": "01:02:03:04:05:06",
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "duration": "PT15S",
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "mtu": 1500,
      "name": "e1b",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "pfc_queues_admin": [
        "integer"
      ],
      "rdma_protocols": [
        "roce"
      ],
      "reachability": "ok",
      "reachable_broadcast_domains": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "ipspace": {
            "name": "ipspace1"
          },
          "name": "bd1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "speed": 1000,
      "state": "string",
      "statistics": {
        "device": {
          "link_down_count_raw": 3,
```

```
          "receive_raw": {
            "discards": 100,
            "errors": 200,
            "packets": 500
          },
          "timestamp": "2017-01-25 06:20:13 -0500",
          "transmit_raw": {
            "discards": 100,
            "errors": 200,
            "packets": 500
          }
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "type": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vlan": {
        "base_port": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "tag": 100
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	_links	
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

discovered_devices

Name	Type	Description
capabilities	array[string]	The list of the capabilities of the discovered device.

Name	Type	Description
chassis_id	string	Identifier associated with this specific discovered device, useful for locating the device in a data center.
ip_addresses	array[string]	The IP addresses on the discovered device.
name	string	Name of the discovered device.
platform	string	Hardware platform of the discovered device.
protocol	string	The protocol used to identify the discovered device. This can have a value of CDP or LLDP.
remaining_hold_time	integer	The number of seconds until the discovered device entry expires and is removed.
remote_port	string	The name of the remote port on the discovered device. The format is dependent on the reporting device.
system_name	string	Additional name used to identify a specific piece of equipment.
version	string	The version of the software running on the discovered device.

node

Name	Type	Description
name	string	Name of node on which the port is located.

active_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	

Name	Type	Description
node	node	
uuid	string	

member_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

lag

Name	Type	Description
active_ports	array[active_ports]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[member_ports]	Array of ports belonging to the LAG, regardless of their state.
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the port.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
uuid	string	

reachable_broadcast_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	_links	
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

device

Device-related counters for the port object. These counters are applicable at the lowest layer of the

networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	receive_raw	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	transmit_raw	Packet transmit counters for the Ethernet port.

throughput_raw

Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

base_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

vlan

Name	Type	Description
base_port	base_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

port

Name	Type	Description
_links	_links	
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
flowcontrol_admin	string	Requested flow control
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	
mac_address	string	
metric	metric	The most recent sample of I/O metrics for the port.

Name	Type	Description
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	node	
pfc_queues_admin	array[integer]	List of PFC queues
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	statistics	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	vlan	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new VLAN or LAG

POST `/network/ethernet/ports`

Introduced In: 9.6

Creates a new VLAN (such as node1:e0a-100) or LAG (ifgrp, such as node2:a0a).

Required properties

- `node` - Node the port will be created on.
- `vlan` - This field cannot be specified at the same time as `lag`.
  - `vlan.base_port` - Physical port or LAG the VLAN will be created on.
  - `vlan.tag` - Tag used to identify VLAN on the base port.
- `lag` - This field cannot be specified at the same time as `vlan`.
  - `lag.mode` - Policy for the LAG that will be created.
  - `lag.distribution_policy` - Indicates how the packets are distributed between ports.
  - `lag.member_ports` - Set of ports the LAG consists of.

Optional properties

- `type` - Defines if a VLAN or LAG will be created:
- `broadcast_domain` - The layer-2 broadcast domain the port is associated with. The port will be placed in a broadcast domain if it is not specified. It may take several minutes for the broadcast domain to be assigned. During that period the port cannot host interfaces.

Related ONTAP commands

- `network port ifgrp create`
- `network port vlan create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	
mac_address	string	
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	node	
rdma_protocols	array[string]	Supported RDMA offload protocols

Name	Type	Description
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	vlan	

Example request


```
{
  "broadcast_domain": {
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "discovered_devices": [
    {
      "capabilities": [
        "router",
        "switch"
      ],
      "chassis_id": "string",
      "ip_addresses": [
        "192.168.100.24",
        "192.168.100.26"
      ],
      "name": "ETY-R1S4-510Q13.datacenter.example.com",
      "platform": "93180YC-EX",
      "protocol": "cdp",
      "remote_port": "FastEthernet0/12",
      "system_name": "string",
      "version": "Cisco Nexus Operating System (NX-OS) Software,
Version 8.1"
    }
  ],
  "interface_count": 0,
  "lag": {
    "active_ports": [
      {
        "name": "e1b",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "distribution_policy": "string",
    "member_ports": [
      {
        "name": "e1b",
        "node": {
```

```
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "mode": "string"
    },
    "mac_address": "01:02:03:04:05:06",
    "mtu": 1500,
    "name": "e1b",
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "rdma_protocols": [
      "roce"
    ],
    "reachable_broadcast_domains": [
      {
        "ipspace": {
          "name": "ipspace1"
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "speed": 1000,
    "state": "string",
    "type": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
    "vlan": {
      "base_port": {
        "name": "e1b",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "tag": 100
    }
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[port]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "broadcast_domain": {
        "ipspace": {
          "name": "ipspace1"
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "discovered_devices": [
        {
          "capabilities": [
            "router",
            "switch"
          ],
          "chassis_id": "string",
          "ip_addresses": [
            "192.168.100.24",
            "192.168.100.26"
          ],
          "name": "ETY-R1S4-510Q13.datacenter.example.com",
          "platform": "93180YC-EX",
          "protocol": "cdp",
          "remote_port": "FastEthernet0/12",
          "system_name": "string",
          "version": "Cisco Nexus Operating System (NX-OS) Software,
Version 8.1"
        }
      ],
      "interface_count": 0,
      "lag": {
        "active_ports": [
          {
            "name": "e1b",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "distribution_policy": "string",
        "member_ports": [
```

```
            {
              "name": "e1b",
              "node": {
                "name": "node1"
              },
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          ],
          "mode": "string"
        },
        "mac_address": "01:02:03:04:05:06",
        "mtu": 1500,
        "name": "e1b",
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "rdma_protocols": [
          "roce"
        ],
        "reachable_broadcast_domains": [
          {
            "ipspace": {
              "name": "ipspace1"
            },
            "name": "bd1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "speed": 1000,
        "state": "string",
        "type": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
        "vlan": {
          "base_port": {
            "name": "e1b",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "tag": 100
        }
      }
    ]
  }
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376361	Port is already a member of a LAG.
1376857	Cannot create a VLAN on a port that is a member of a LAG.
1377609	The update is partially complete. Updating broadcast domain attributes on this port has failed.
1966189	Port is the home port or current port of an interface.
1966466	VLAN ID must be a number from 1 to 4094.
1967083	The specified type is not valid.
1967084	The specified node UUID is not valid.
1967085	The specified node name is not valid.
1967086	Node name and UUID must match if both are provided.
1967087	The specified broadcast domain UUID is not valid.
1967088	The specified broadcast domain name does not exist in the specified IPspace.
1967089	The specified broadcast domain UUID, name, and IPspace name do not match.
1967090	The specified VLAN base port UUID is not valid.
1967091	The specified VLAN base port name and node name are not valid.
1967092	The specified node does not match the node specified for the VLAN base port.
1967093	The specified VLAN base port UUID, name, and VLAN base port node name do not match.
1967094	The specified LAG member port UUID is not valid.
1967095	The specified LAG member port name and node name combination is not valid.

Error Code	Description
1967096	The specified node does not match the specified LAG member port node.
1967097	The specified LAG member ports UUID, name, and node name do not match.
1967098	VLAN POST operation has failed because admin status could not be set for the specified port.
1967099	Partial success of the VLAN POST operation. Verify the state of the created VLAN for more information.
1967100	LAG POST operation failed because admin status could not be set.
1967101	Partial success of the LAG POST operation. Verify the state of the created LAG for more information.
1967102	POST operation might have left the configuration in an inconsistent state. Check the configuration.
1967126	A LAG requires at least one member port.
1967148	Failure to remove port from broadcast domain.
1967149	Failure to add port to broadcast domain.
1967175	VLANs cannot be created on ports in the Cluster IPspace.
1967190	Missing or incomplete VLAN specification.
1967191	Missing or incomplete lag specification.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

discovered_devices

Name	Type	Description
capabilities	array[string]	The list of the capabilities of the discovered device.
chassis_id	string	Identifier associated with this specific discovered device, useful for locating the device in a data center.
ip_addresses	array[string]	The IP addresses on the discovered device.
name	string	Name of the discovered device.
platform	string	Hardware platform of the discovered device.

Name	Type	Description
protocol	string	The protocol used to identify the discovered device. This can have a value of CDP or LLDP.
remaining_hold_time	integer	The number of seconds until the discovered device entry expires and is removed.
remote_port	string	The name of the remote port on the discovered device. The format is dependent on the reporting device.
system_name	string	Additional name used to identify a specific piece of equipment.
version	string	The version of the software running on the discovered device.

node

Name	Type	Description
name	string	Name of node on which the port is located.

active_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

member_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

lag

Name	Type	Description
active_ports	array[active_ports]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[member_ports]	Array of ports belonging to the LAG, regardless of their state.
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the port.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
name	string	
uuid	string	

reachable_broadcast_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace

Name	Type	Description
uuid	string	Broadcast domain UUID

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

device

Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
timestamp	string	The timestamp when the device specific counters were collected.

throughput_raw

Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate

of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the port.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the throughput_raw performance data.

base_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

vlan

Name	Type	Description
base_port	base_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

port

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	
mac_address	string	

Name	Type	Description
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	node	
rdma_protocols	array[string]	Supported RDMA offload protocols
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	vlan	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a VLAN or LAG

DELETE `/network/ethernet/ports/{uuid}`

Introduced In: 9.6

Deletes a VLAN or LAG.

Related ONTAP commands

- `network port ifgrp delete`
- `network port vlan delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Port UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376858	Port already has an interface bound.
1966189	Port is the home port or current port of an interface.
1966302	This interface group is hosting VLAN interfaces that must be deleted before running this command.
1967105	Cannot delete a physical port.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a physical port, VLAN, or LAG details

GET `/network/ethernet/ports/{uuid}`

Introduced In: 9.6

Retrieves the details of a physical port, VLAN, or LAG.

Related ONTAP commands

- `network port show`
- `network port ifgrp show`
- `network port vlan show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Port UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
flowcontrol_admin	string	Requested flow control
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	
mac_address	string	
metric	metric	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	node	
pfc_queues_admin	array[integer]	List of PFC queues
rdma_protocols	array[string]	Supported RDMA offload protocols

Name	Type	Description
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	statistics	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	vlan	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "discovered_devices": [
    {
      "capabilities": [
        "router",
        "switch"
      ],
      "chassis_id": "string",
      "ip_addresses": [
        "192.168.100.24",
        "192.168.100.26"
      ],
      "name": "ETY-R1S4-510Q13.datacenter.example.com",
      "platform": "93180YC-EX",
      "protocol": "cdp",
      "remote_port": "FastEthernet0/12",
      "system_name": "string",
      "version": "Cisco Nexus Operating System (NX-OS) Software,
Version 8.1"
    }
  ],
  "flowcontrol_admin": "string",
  "interface_count": 0,
  "lag": {
    "active_ports": [
      {
        "_links": {
```

```
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "e1b",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "distribution_policy": "string",
    "member_ports": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "e1b",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "mode": "string"
  },
  "mac_address": "01:02:03:04:05:06",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "mtu": 1500,
  "name": "e1b",
```

```
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "pfc_queues_admin": [
    "integer"
  ],
  "rdma_protocols": [
    "roce"
  ],
  "reachability": "ok",
  "reachable_broadcast_domains": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "name": "ipspace1"
      },
      "name": "bd1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "speed": 1000,
  "state": "string",
  "statistics": {
    "device": {
      "link_down_count_raw": 3,
      "receive_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "transmit_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      }
```

```
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "type": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vlan": {
    "base_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "tag": 100
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	_links	
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

discovered_devices

Name	Type	Description
capabilities	array[string]	The list of the capabilities of the discovered device.
chassis_id	string	Identifier associated with this specific discovered device, useful for locating the device in a data center.
ip_addresses	array[string]	The IP addresses on the discovered device.

Name	Type	Description
name	string	Name of the discovered device.
platform	string	Hardware platform of the discovered device.
protocol	string	The protocol used to identify the discovered device. This can have a value of CDP or LLDP.
remaining_hold_time	integer	The number of seconds until the discovered device entry expires and is removed.
remote_port	string	The name of the remote port on the discovered device. The format is dependent on the reporting device.
system_name	string	Additional name used to identify a specific piece of equipment.
version	string	The version of the software running on the discovered device.

node

Name	Type	Description
name	string	Name of node on which the port is located.

active_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

member_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

lag

Name	Type	Description
active_ports	array[active_ports]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[member_ports]	Array of ports belonging to the LAG, regardless of their state.
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the port.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

reachable_broadcast_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	_links	
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

device

Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	receive_raw	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	transmit_raw	Packet transmit counters for the Ethernet port.

throughput_raw

Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

base_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

vlan

Name	Type	Description
base_port	base_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a port

PATCH `/network/ethernet/ports/{uuid}`

Introduced In: 9.6

Updates a port.

Related ONTAP commands

- `network port broadcast-domain add-ports`
- `network port broadcast-domain remove-ports`
- `network port modify`
- `network port ifgrp add-port`
- `network port ifgrp remove-port`
- `network port reachability repair`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Port UUID

Request Body

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
flowcontrol_admin	string	Requested flow control
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	
mac_address	string	
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
pfc_queues_admin	array[integer]	List of PFC queues
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.

Name	Type	Description
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
uuid	string	Port UUID

Example request


```
{
  "broadcast_domain": {
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "discovered_devices": [
    {
      "capabilities": [
        "router",
        "switch"
      ],
      "chassis_id": "string",
      "ip_addresses": [
        "192.168.100.24",
        "192.168.100.26"
      ],
      "name": "ETY-R1S4-510Q13.datacenter.example.com",
      "platform": "93180YC-EX",
      "protocol": "cdp",
      "remote_port": "FastEthernet0/12",
      "system_name": "string",
      "version": "Cisco Nexus Operating System (NX-OS) Software,
Version 8.1"
    }
  ],
  "flowcontrol_admin": "string",
  "interface_count": 0,
  "lag": {
    "active_ports": [
      {
        "name": "e1b",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "member_ports": [
      {
        "name": "e1b",
        "node": {
```

```
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ]
    },
    "mac_address": "01:02:03:04:05:06",
    "mtu": 1500,
    "name": "e1b",
    "pfc_queues_admin": [
      "integer"
    ],
    "rdma_protocols": [
      "roce"
    ],
    "reachability": "ok",
    "reachable_broadcast_domains": [
      {
        "ipspace": {
          "name": "ipspace1"
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "speed": 1000,
    "state": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376361	Port is already a member of a LAG.

Error Code	Description
1376369	Cannot add port to the interface group because the port hosts one or more VLANs.
1376488	Disabling the last operational cluster port on a node is not allowed.
1376492	Cannot change the MTU of a VLAN to be greater than the MTU of the port hosting it.
1377563	Port is already a member of a LAG.
1377608	Port cannot be used because it is currently the home port or current port of an interface.
1377609	The update is partially complete. Updating broadcast domain attributes on this port has failed.
1966288	Disabling the cluster ports can only be done on the local node.
1967087	The specified broadcast domain UUID is not valid.
1967088	The specified broadcast domain name does not exist in the specified IPspace.
1967089	The specified broadcast domain UUID, name and IPspace name do not match.
1967094	The specified LAG member port UUID is not valid.
1967095	The specified LAG member port name and node name combination is not valid.
1967096	The specified node does not match the specified LAG member port node.
1967097	The specified LAG member ports UUID, name, and node name do not match.
1967126	A LAG requires at least one member port.
1967148	Failure to remove port from broadcast domain.
1967149	Failure to add port to broadcast domain.
1967184	The reachability parameter cannot be patched in the same request as other parameters that might affect the target port's reachability status.
1967185	The port cannot be repaired because the port is deemed as non-repairable.
1967186	Invalid value for the reachability parameter.
1967195	Missing or incomplete name retrieval for specified port UUID.
1967580	This command is not supported as the effective cluster version is earlier than 9.8.

Error Code	Description
1967582	The reachability parameter is not supported on this cluster.
53216932	Failed to determine whether newly introduced PFC flow control is supported.
53280899	Not all nodes support enabling the PFC feature.
53280900	No PFC queues specified.
53280901	Failed to modify PFC.
53280902	Cluster ports does not support PFC flow control.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

discovered_devices

Name	Type	Description
capabilities	array[string]	The list of the capabilities of the discovered device.
chassis_id	string	Identifier associated with this specific discovered device, useful for locating the device in a data center.
ip_addresses	array[string]	The IP addresses on the discovered device.
name	string	Name of the discovered device.
platform	string	Hardware platform of the discovered device.

Name	Type	Description
protocol	string	The protocol used to identify the discovered device. This can have a value of CDP or LLDP.
remaining_hold_time	integer	The number of seconds until the discovered device entry expires and is removed.
remote_port	string	The name of the remote port on the discovered device. The format is dependent on the reporting device.
system_name	string	Additional name used to identify a specific piece of equipment.
version	string	The version of the software running on the discovered device.

node

Name	Type	Description
name	string	Name of node on which the port is located.

active_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

member_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

lag

Name	Type	Description
active_ports	array[active_ports]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
member_ports	array[member_ports]	Array of ports belonging to the LAG, regardless of their state.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the port.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
name	string	
uuid	string	

reachable_broadcast_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
ipspace	ipspace	
name	string	Name of the broadcast domain, scoped to its IPspace

Name	Type	Description
uuid	string	Broadcast domain UUID

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

device

Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
timestamp	string	The timestamp when the device specific counters were collected.

throughput_raw

Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate

of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the port.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the throughput_raw performance data.

base_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

vlan

Name	Type	Description
base_port	base_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

port

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
discovered_devices	array[discovered_devices]	Discovered devices
enabled	boolean	
flowcontrol_admin	string	Requested flow control
interface_count	integer	Number of interfaces hosted. This field is only applicable for cluster administrators. No value is returned for SVM administrators. If the node hosting a port is not healthy no value will be returned.
lag	lag	

Name	Type	Description
mac_address	string	
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
pfc_queues_admin	array[integer]	List of PFC queues
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[reachable_broadcast_domains]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
uuid	string	Port UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical port performance metrics

GET `/network/ethernet/ports/{uuid}/metrics`

Introduced In: 9.8

Retrieves historical performance metrics for a port.

Parameters

Name	Type	In	Required	Description
status	string	query	False	Filter by status
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
duration	string	query	False	Filter by duration
timestamp	string	query	False	Filter by timestamp
uuid	string	path	True	Unique identifier of the port.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Throughput performance for the Ethernet port.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.
uuid	string	Port UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve network Ethernet switch ports

Network Ethernet switch ports endpoint overview

Overview

This API can be used to get the port information for an ethernet switch used in a cluster or storage networks. This API supports GET only. The GET operation returns a list of ports with status and configuration information.

Examples

Retrieving the ports for ethernet switches

The following example retrieves the ethernet switch ports for all the ethernet switches used for cluster and/or storage networks.
Note that if the *fields=** parameter is not specified, the fields identity.number, statistics, and mac_address are not returned.
Filters can be added on the fields to limit the results.

```
# The API:
GET /network/ethernet/switch/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switch/ports?fields=*"
-H  "accept: application/hal+json" -H  "Content-Type:
application/hal+json"

# The response: (abbreviated output due to length, shows a port connected
to a node, a port with no remote connection and a port connected to shelf)
{
"records": [
  {
    "switch": {
      "name": "RTP-CS01-510R11(FOC22092K12)",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/switches/RTP-CS01-
510R11(FOC22092K12)"
```

```
        }
      }
    },
    "identity": {
      "name": "Ethernet1/1",
      "index": 436207616,
      "number": 1,
      "type": "ethernetcsmacd"
    },
    "mtu": 9216,
    "duplex_type": "full_duplex",
    "speed": 100000,
    "configured": "up",
    "state": "up",
    "isl": false,
    "vpc_peer_link": false,
    "statistics": {
      "timestamp": "2024-11-08T19:51:12+00:00",
      "receive_raw": {
        "packets": 1616467751,
        "errors": 0,
        "discards": 0
      },
      "transmit_raw": {
        "packets": 206717534,
        "errors": 0,
        "discards": 0
      }
    },
    "remote_port": {
      "mtu": 9000,
      "name": "e3a",
      "functional_roles": [
        "cluster",
        "ha"
      ],
      "device": {
        "discovered_name": "stiA400-311",
        "node": {
          "name": "stiA400-311",
          "uuid": "54c0f036-8a3a-11ea-893d-00a098fd726d",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/54c0f036-8a3a-11ea-893d-
00a098fd726d"
            }
```

```
          }
        }
      }
    },
    "mac_address": "00:be:75:ae:2a:d4",
    "vlan_id": [
      1,
      17,
      18
    ],
    "roles": [
      {
        "type": "cluster",
        "zone": 1
      }
    ],
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switch/ports/RTP-CS01-
510R11%28FOC22092K12%29/Ethernet1%2F1/436207616"
      }
    }
  },
  {
    "switch": {
      "name": "RTP-CS01-510R11(FOC22092K12)",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/switches/RTP-CS01-
510R11(FOC22092K12)"
        }
      }
    },
    "identity": {
      "name": "Ethernet1/11",
      "index": 436212736,
      "number": 11,
      "type": "ethernetcsmacd"
    },
    "mtu": 9216,
    "duplex_type": "unknown",
    "speed": 100000,
    "configured": "up",
    "state": "down",
    "isl": false,
    "vpc_peer_link": false,
```

```
    "statistics": {
      "timestamp": "2024-11-08T19:51:12+00:00",
      "receive_raw": {
        "packets": 0,
        "errors": 0,
        "discards": 0
        },
      "transmit_raw": {
        "packets": 0,
        "errors": 0,
        "discards": 0
      }
    },
    "mac_address": "00be75ae2afc",
    "vlan_id": [
      1,
      17,
      18
    ],
    "roles": [
      {
        "type": "cluster",
        "zone": 1
      }
    ],
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switch/ports/RTP-CS01-
510R11%28FOC22092K12%29/Ethernet1%2F11/436212736"
      }
    }
  },
  {
    "switch": {
      "name": "RTP-SS01-510R10(FOC22170DFR)",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/switches/RTP-SS01-
510R10(FOC22170DFR)"
        }
      }
    },
    "identity": {
      "name": "Ethernet1/10",
      "index": 436212224,
      "number": 10,
```

```
      "type": "ethernetcsmacd"
    },
    "mtu": 9216,
    "duplex_type": "full_duplex",
    "speed": 100000,
    "configured": "up",
    "state": "up",
    "isl": false,
    "vpc_peer_link": false,
    "statistics": {
      "timestamp": "2024-11-08T19:51:12+00:00",
      "receive_raw": {
        "packets": 332013844,
        "errors": 0,
        "discards": 0
      },
      "transmit_raw": {
        "packets": 2429595607,
        "errors": 0,
        "discards": 0
      }
    },
    "remote_port": {
      "mtu": 9000,
      "name": "e0a",
      "functional_roles": [
        "storage_shelf"
      ],
      "device": {
        "discovered_name": "1.1",
        "shelf": {
          "name": "1.1",
          "module": "B",
          "uid": "12439000444923584512",
          "_links": {
            "self": {
              "href": "/api/storage/shelves/12439000444923584512"
            }
          }
        }
      }
    },
    "mac_address": "00fcbaead548",
    "vlan_id": [
      1,
      30
```

```
    ],
    "roles": [
      {
        "type": "storage",
        "zone": 1
      }
    ],
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switch/ports/RTP-SS01-
510R10%28FOC22170DFR%29/Ethernet1%2F10/436212224"
      }
    }
  }
],
"num_records": 138,
"_links": {
  "self": {
    "href": "/api/network/ethernet/switch/ports?fields=*"
  }
}
}
```

Retrieving a ports on an ethernet switch

```
# The API:
GET /network/ethernet/switch/ports/{switch.name}/{identity.name}/
{identity.index}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switch/ports/RTP-SS02-
510R10%28FOC22131U6T%29/Ethernet1%2F9/436211712" -H  "accept:
application/hal+json" -H  "Content-Type: application/hal+json"

# The response:
{
"switch": {
  "name": "RTP-SS02-510R10(FOC22131U6T)",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switches/RTP-SS02-
510R10(FOC22131U6T)"
    }
  }
```

```
},
"identity": {
  "name": "Ethernet1/9",
  "index": 436211712,
  "number": 9,
  "type": "ethernetcsmacd"
},
"mtu": 9216,
"duplex_type": "full_duplex",
"speed": 100000,
"configured": "up",
"state": "up",
"isl": false,
"vpc_peer_link": false,
"statistics": {
  "timestamp": "2024-11-08T19:51:12+00:00",
  "receive_raw": {
    "packets": 4012559315,
    "errors": 0,
    "discards": 0
  },
  "transmit_raw": {
    "packets": 337898026,
    "errors": 0,
    "discards": 0
 }
},
"remote_port": {
  "mtu": 9000,
  "name": "e0a",
  "functional_roles": [
    "storage_shelf"
  ],
  "device": {

    # cSpell:disable-next-line
    "discovered_name": "SHFFG1234567890:A",
    "shelf": {
      "name": "1.1",
      "module": "A",
      "uid": "12439000444923584512",
      "_links": {
        "self": {
          "href": "/api/storage/shelves/12439000444923584512"
        }
      }
```

```
      }
    }
  },
  "mac_address": "00fcbaea7228",
  "vlan_id": [
    1,
    30
  ],
  "roles": [
    {
      "type": "storage",
      "zone": 1
    }
  ],
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switch/ports/RTP-SS02-
510R10%28FOC22131U6T%29/Ethernet1%2F9/436211712"
    }
  }
}
```

Retrieve Ethernet switch ports

GET `/network/ethernet/switch/ports`

Introduced In: 9.8

Retrieves the ethernet switch ports.

Related ONTAP commands

- `system switch ethernet interface show`

Learn more

- DOC /network/ethernet/switch/ports

Parameters

Name	Type	In	Required	Description
statistics.receive_raw.discards	integer	query	False	Filter by statistics.receive_raw.discards

Name	Type	In	Required	Description
statistics.receive_raw.errors	integer	query	False	Filter by statistics.receive_raw.errors
statistics.receive_raw.packets	integer	query	False	Filter by statistics.receive_raw.packets
statistics.transmit_raw.discards	integer	query	False	Filter by statistics.transmit_raw.discards
statistics.transmit_raw.errors	integer	query	False	Filter by statistics.transmit_raw.errors
statistics.transmit_raw.packets	integer	query	False	Filter by statistics.transmit_raw.packets
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.17
configured	string	query	False	Filter by configured
isl	boolean	query	False	Filter by isl
duplex_type	string	query	False	Filter by duplex_type
mtu	integer	query	False	Filter by mtu
remote_port.functional_roles	string	query	False	Filter by remote_port.functional_roles • Introduced in: 9.17
remote_port.device.node.uuid	string	query	False	Filter by remote_port.device.node.uuid

Name	Type	In	Required	Description
remote_port.device.node.name	string	query	False	Filter by remote_port.device.node.name
remote_port.device.discovered_name	string	query	False	Filter by remote_port.device.discovered_name • Introduced in: 9.17
remote_port.device.shelf.module	string	query	False	Filter by remote_port.device.shelf.module • Introduced in: 9.12
remote_port.device.shelf.name	string	query	False	Filter by remote_port.device.shelf.name • Introduced in: 9.12
remote_port.device.shelf.uid	string	query	False	Filter by remote_port.device.shelf.uid
remote_port.mtu	integer	query	False	Filter by remote_port.mtu
remote_port.name	string	query	False	Filter by remote_port.name
state	string	query	False	Filter by state
mac_address	string	query	False	Filter by mac_address
switch.name	string	query	False	Filter by switch.name
type	string	query	False	Filter by type

Name	Type	In	Required	Description
roles.type	string	query	False	Filter by roles.type • Introduced in: 9.17
roles.dr_group	string	query	False	Filter by roles.dr_group • Introduced in: 9.17
roles.zone	integer	query	False	Filter by roles.zone • Introduced in: 9.17 • Min value: 1
vpc_peer_link	boolean	query	False	Filter by vpc_peer_link • Introduced in: 9.15
vlan_id	integer	query	False	Filter by vlan_id
speed	integer	query	False	Filter by speed
identity.number	integer	query	False	Filter by identity.number
identity.breakout.physical_port	string	query	False	Filter by identity.breakout.physical_port • Introduced in: 9.17
identity.breakout.number	integer	query	False	Filter by identity.breakout.number • Introduced in: 9.17
identity.name	string	query	False	Filter by identity.name

Name	Type	In	Required	Description
identity.index	integer	query	False	Filter by identity.index
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Min value: 0 • Default value: 1 • Max value: 120
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	

Name	Type	Description
num_records	integer	Number of Records
records	array[switch_port]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "configured": "string",
      "duplex_type": "string",
      "identity": {
        "breakout": {
          "number": 1,
          "physical_port": "Ethernet1/9"
        },
        "index": 0,
        "name": "string",
        "number": 0
      },
      "mac_address": "string",
      "mtu": 0,
      "remote_port": {
        "device": {
          "discovered_name": "stiA400-311",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "shelf": {
            "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "module": "string",
          "name": "1.1",
          "uid": "12439000444923584512"
        }
      },
      "functional_roles": [
        "string"
      ],
      "mtu": 0,
      "name": "string"
    },
    "roles": [
      {
        "dr_group": "string",
        "type": "string"
      }
    ],
    "speed": 0,
    "state": "string",
    "statistics": {
      "receive_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      },
      "timestamp": "2024-11-18 10:52:17 -0500",
      "transmit_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      }
    },
    "switch": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "RTP-SS01-510R03(FOC223443KQ)"
    },
    "type": "string",
    "vlan_id": [
```

```
          "integer"
        ]
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

breakout

Name	Type	Description
number	integer	Breakout port sub-interface number.
physical_port	string	Breakout physical port name.

identity

Name	Type	Description
breakout	breakout	
index	integer	Interface Index.
name	string	Interface Name.
number	integer	Interface Number.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

shelf

Shelf connected to this port.

Name	Type	Description
_links	_links	
module	string	Shelf module connected to this port.
name	string	
uid	string	

device

Device connected to port.

Name	Type	Description
discovered_name	string	Raw name of the discovered device.
node	node	
shelf	shelf	Shelf connected to this port.

remote_port

Remote port.

Name	Type	Description
device	device	Device connected to port.
functional_roles	array[string]	
mtu	integer	MTU in octets.
name	string	Remote port name.

roles

Allowed use for this port.

Name	Type	Description
dr_group	string	DR group.
type	string	Allowed use type.
zone	integer	Zone ID to differentiate between roles with the same type.

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

statistics

These are raw counters for the device associated with the Ethernet port.

Name	Type	Description
receive_raw	receive_raw	Packet receive counters for the Ethernet port.
timestamp	string	The time the statistics were gathered.

Name	Type	Description
transmit_raw	transmit_raw	Packet transmit counters for the Ethernet port.

switch

The name of the specified cluster or storage switch.

Name	Type	Description
_links	self_link	
name	string	

switch_port

Ethernet Switch Port REST API

Name	Type	Description
_links	self_link	
configured	string	Administrative Status.
duplex_type	string	Duplex Settings.
identity	identity	
isl	boolean	Is configured as an ISL link.
mac_address	string	MAC Address.
mtu	integer	MTU.
remote_port	remote_port	Remote port.
roles	array[roles]	
speed	integer	Interface Speed(Mbps).
state	string	Operational Status.
statistics	statistics	These are raw counters for the device associated with the Ethernet port.
switch	switch	The name of the specified cluster or storage switch.

Name	Type	Description
type	string	Interface Type.
vlan_id	array[integer]	
vpc_peer_link	boolean	Is configured as a Virtual Port Channel (vPC) peer-link.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an Ethernet switch port

GET `/network/ethernet/switch/ports/{switch}/{identity.name}/{identity.index}`

Introduced In: 9.8

Retrieves an ethernet switch port.

Related ONTAP commands

- `system switch ethernet interface show`

Parameters

Name	Type	In	Required	Description
switch	string	path	True	Switch Name

Name	Type	In	Required	Description
identity.name	string	path	True	Interface Name
identity.index	integer	path	True	Interface Index
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
configured	string	Administrative Status.
duplex_type	string	Duplex Settings.
identity	identity	
isl	boolean	Is configured as an ISL link.
mac_address	string	MAC Address.
mtu	integer	MTU.
remote_port	remote_port	Remote port.
roles	array[roles]	
speed	integer	Interface Speed(Mbps).
state	string	Operational Status.
statistics	statistics	These are raw counters for the device associated with the Ethernet port.
switch	switch	The name of the specified cluster or storage switch.
type	string	Interface Type.
vlan_id	array[integer]	

Name	Type	Description
vpc_peer_link	boolean	Is configured as a Virtual Port Channel (vPC) peer-link.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configured": "string",
  "duplex_type": "string",
  "identity": {
    "breakout": {
      "number": 1,
      "physical_port": "Ethernet1/9"
    },
    "index": 0,
    "name": "string",
    "number": 0
  },
  "mac_address": "string",
  "mtu": 0,
  "remote_port": {
    "device": {
      "discovered_name": "stiA400-311",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "shelf": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "module": "string",
        "name": "1.1",
        "uid": "12439000444923584512"
      }
    },
    "functional_roles": [
      "string"
```

```
      ],
      "mtu": 0,
      "name": "string"
    },
    "roles": [
      {
        "dr_group": "string",
        "type": "string"
      }
    ],
    "speed": 0,
    "state": "string",
    "statistics": {
      "receive_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      },
      "timestamp": "2024-11-18 10:52:17 -0500",
      "transmit_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      }
    },
    "switch": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "RTP-SS01-510R03(FOC223443KQ)"
    },
    "type": "string",
    "vlan_id": [
      "integer"
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

breakout

Name	Type	Description
number	integer	Breakout port sub-interface number.
physical_port	string	Breakout physical port name.

identity

Name	Type	Description
breakout	breakout	
index	integer	Interface Index.
name	string	Interface Name.
number	integer	Interface Number.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

shelf

Shelf connected to this port.

Name	Type	Description
_links	_links	
module	string	Shelf module connected to this port.
name	string	
uid	string	

device

Device connected to port.

Name	Type	Description
discovered_name	string	Raw name of the discovered device.
node	node	
shelf	shelf	Shelf connected to this port.

remote_port

Remote port.

Name	Type	Description
device	device	Device connected to port.
functional_roles	array[string]	
mtu	integer	MTU in octets.
name	string	Remote port name.

roles

Allowed use for this port.

Name	Type	Description
dr_group	string	DR group.
type	string	Allowed use type.

Name	Type	Description
zone	integer	Zone ID to differentiate between roles with the same type.

receive_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

statistics

These are raw counters for the device associated with the Ethernet port.

Name	Type	Description
receive_raw	receive_raw	Packet receive counters for the Ethernet port.
timestamp	string	The time the statistics were gathered.
transmit_raw	transmit_raw	Packet transmit counters for the Ethernet port.

switch

The name of the specified cluster or storage switch.

Name	Type	Description
_links	self_link	
name	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Ethernet switches

Network Ethernet switches endpoint overview

Overview

This endpoint manages Ethernet switches used by ONTAP for monitoring and configuration. You can retrieve, configure, add, or delete Ethernet switches, as well as change SNMP credentials and monitor their status.

Examples

Retrieving a list of Ethernet switches

The following example shows the response with a list of monitored Ethernet switches. Note that if the *fields=** parameter is not specified, the fields snmp.version, snmp.user, version, monitoring.enabled, and monitoring.reason are not returned.

```
# The API:
/network/ethernet/switches

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switches?fields=*" -H
```

```
"accept: application/hal+json" -H "Content-Type: application/hal+json"

# The response:
{
"records": [
  {
    "name": "RTP-CS01-510R11(FOC22092K12)",
    "address": "172.26.207.77",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
      "enabled": true,
      "monitored": true,
      "reason": "None"
    },
    "network": "cluster",
    "serial_number": "Unknown",
    "snmp": {
      "version": "snmpv2c",
      "user": "cshm1!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.2(3)",
    "role": "cluster",
    "rcf_version": "RCF NX3232C v1.13 1-CLUSTER",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-CS01-
510R11%28FOC22092K12%29"
      }
    }
  },
  {
    "name": "RTP-CS01-510R12(FOC22373C3P)",
    "address": "172.26.207.82",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
      "enabled": true,
      "monitored": true,
      "reason": "None"
    },
    "network": "cluster",
    "serial_number": "FOC22373C3P",
    "snmp": {
      "version": "snmpv2c",
```

```
      "user": "cshm1!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.2(3)",
    "role": "cluster",
    "rcf_version": "RCF NX3232C v1.13 1-CLUSTER",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-CS01-
510R12%28FOC22373C3P%29"
      }
    }
  },
  {
    "name": "RTP-SS01-510R10(FOC22170DFR)",
    "address": "172.26.207.65",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
      "enabled": true,
      "monitored": true,
      "reason": "None"
    },
    "network": "storage",
    "serial_number": "FOC22170DFR",
    "snmp": {
      "version": "snmpv2c",
      "user": "cshm1!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.3(3)",
    "role": "storage",
    "rcf_version": "RCF NX3232C v1.13 1-STORAGE",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-SS01-
510R10%28FOC22170DFR%29"
      }
    }
  },
  {
    "name": "RTP-SS02-510R10(FOC22131U6T)",
    "address": "172.26.207.66",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
```

```
      "enabled": true,
      "monitored": true,
      "reason": "None"
    },
    "network": "storage",
    "serial_number": "FOC22131U6T",
    "snmp": {
      "version": "snmpv2c",
      "user": "cshm1!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.3(3)",
    "role": "storage",
    "rcf_version": "RCF NX3232C v1.13 1-STORAGE",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-SS02-
510R10%28FOC22131U6T%29"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/network/ethernet/switches?fields=*"
  }
}
}
```


Retrieving an Ethernet switch

The following example shows the response of the requested Ethernet switch. If there is no Ethernet switch with the requested name, an error is returned.

```
# The API:
/network/ethernet/switches/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switches/RTP-SS02-
510R10(FOC22131U6T)?fields=*" -H  "accept: application/hal+json" -H
"Content-Type: application/hal+json"

# The response:
{
"name": "RTP-SS02-510R10(FOC22131U6T)",
"address": "172.26.207.66",
"discovered": true,
"model": "NX3232C",
"monitoring": {
  "enabled": true,
  "monitored": true,
  "reason": "None"
},
"network": "storage",
"serial_number": "FOC22131U6T",
"snmp": {
  "version": "snmpv2c",
  "user": "cshm1!"
},
"version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.3(3)",
"role": "storage",
"rcf_version": "RCF NX3232C v1.13 1-STORAGE",
"_links": {
  "self": {
    "href": "/api/network/ethernet/switches/RTP-SS02-510R10(FOC22131U6T)"
  }
}
}
```

Configuring monitoring settings for an Ethernet switch

The following example configures SNMP credential and version settings for an Ethernet switch. If the provided information is not valid, an error is returned.

```
# The API:
/network/ethernet/switches/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/switches/sconqa-
corduroyl-03" -H "accept: application/hal+json" -H "Content-Type:
application/hal+json" -d '{"snmp": {"version": "snmpv2c", "user":
"cshm1!"}}'

# The response:
{
"job": {
  "uuid": "f84fbb3c-589c-11ec-b181-d039ea48a7dc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f84fbb3c-589c-11ec-b181-d039ea48a7dc"
    }
  }
}
}
```

Adding an Ethernet switch

The following example adds an Ethernet switch for monitoring. If the provided information is not valid, an error is returned.

```
# The API:
/network/ethernet/switches

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ethernet/switches" -H "accept:
application/hal+json" -H "Content-Type: application/hal+json" -d '{"name":
"RTP-SS02-510R10(FOC22131U6T)", "address": "172.26.207.66", "model":
"NX3232C", "monitoring": {"enabled": "true"}, "network": "storage",
"snmp": {"version": "snmpv2c", "user": "cshm1!"}}'

# The response:
{
"job": {
  "uuid": "f84fbb3c-589c-11ec-b181-d039ea48a7dc",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f84fbb3c-589c-11ec-b181-d039ea48a7dc"
    }
  }
}
}
```

Deleting an Ethernet switch

The following example deletes an Ethernet switch. If there is no Ethernet switch with the requested name, an error is returned.

```
# The API:
/network/ethernet/switches/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ethernet/switches/sconqa-
corduroyl-03" -H "accept: application/hal+json" -H "Content-Type:
application/hal+json"

# The response:
{
}
```

Retrieve Ethernet switches attached to a chassis

GET `/network/ethernet/switches`

Introduced In: 9.8

Retrieves a collection of Ethernet switches.

Related ONTAP commands

- `system switch ethernet show`

Learn more

- DOC /network/ethernet/switches

Parameters

Name	Type	In	Required	Description
address	string	query	False	Filter by address
name	string	query	False	Filter by name
network	string	query	False	Filter by network
snmp.version	string	query	False	Filter by snmp.version
snmp.user	string	query	False	Filter by snmp.user
role	string	query	False	Filter by role • Introduced in: 9.17
discovered	boolean	query	False	Filter by discovered
model	string	query	False	Filter by model
version	string	query	False	Filter by version
rcf_version	string	query	False	Filter by rcf_version • Introduced in: 9.17
serial_number	string	query	False	Filter by serial_number
monitoring.enabled	boolean	query	False	Filter by monitoring.enabled

Name	Type	In	Required	Description
monitoring.monitored	boolean	query	False	Filter by monitoring.monitored
monitoring.reason	string	query	False	Filter by monitoring.reason
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[switch]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "address": "string",
      "model": "string",
      "monitoring": {
        "reason": "string"
      },
      "name": "string",
      "network": "string",
      "rcf_version": "RCF NX9336C-FX2 v1.13 1-CLUSTER",
      "role": [
        "cluster+storage"
      ],
      "serial_number": "string",
      "snmp": {
        "user": "string",
        "version": "string"
      },
      "version": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

switch

Ethernet Switch REST API

Name	Type	Description
_links	self_link	
address	string	IP Address.

Name	Type	Description
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
model	string	Model Number.
monitoring	monitoring	
name	string	Name.
network	string	Switch Network.
rcf_version	string	The switch reference configuration file (RCF) version.
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create an Ethernet switch

POST `/network/ethernet/switches`

Introduced In: 9.11

Adds an Ethernet switch.

Required properties

- `name` - Name of the switch to create.
- `address` - Switch IP address.
- `model` - Switch model number.
- `monitoring.enabled` - Whether the switch should be monitored by CSHM.
- `network`
  - *cluster* for cluster or shared switches.
  - *storage* for storage switches.
- `snmp.version` - SNMP version.
- `snmp.user` - SNMP user.

Related ONTAP commands

- `system switch ethernet create`

Learn more

- DOC /network/ethernet/switches

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
address	string	IP Address.

Name	Type	Description
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
model	string	Model Number.
monitoring	monitoring	
name	string	Name.
network	string	Switch Network.
rcf_version	string	The switch reference configuration file (RCF) version.
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

Example request

```
{
  "address": "string",
  "model": "string",
  "monitoring": {
    "reason": "string"
  },
  "name": "string",
  "network": "string",
  "rcf_version": "RCF NX9336C-FX2 v1.13 1-CLUSTER",
  "role": [
    "cluster+storage"
  ],
  "serial_number": "string",
  "snmp": {
    "user": "string",
    "version": "string"
  },
  "version": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636148	Failed to discover SNMPv3 engine ID of the remote switch.
5636149	The "<snmp.user>\" must be a valid SNMPv3 user belonging to remote switch \"<name.>\" and must also be configured in ONTAP.</name.></snmp.user>
5636152	0.0.0.0 cannot be specified as the IP address for the "<address.>\" parameter.</address.>
8912900	Invalid IP address.
9044009	SNMPv3 client feature is not available until the effective cluster version is ONTAP 9.3 or later.
12517377	Model number validation failed. Specify the correct model number and try the command again.
12517378	The IP "<address.>\" is not reachable. Verify that the address is valid, or check the network path.</address.>
12517380	SNMP validation request timed out. Verify that the "<snmp.user>\" parameter is valid.</snmp.user>
12517382	SNMPv3 validation request timed out. Verify that the "<snmp.user>\" parameter is valid (i.e., the SNMPv3 user exists in ONTAP and on the remote switch). If the \"<snmp.user>\" parameter is valid, verify that the SNMPv3 user’s credentials are the same both in ONTAP as well as in the remote switch. If a custom engine-id was provided for the SNMPv3 user, ensure it is the same as that of the remote switch.</snmp.user></snmp.user>
12517384	A switch with the same IP address is already being monitored.

Error Code	Description
12517385	The "<model.>\" is unknown. Use \"OTHER\" if the switch model is not one of the following: {models}.</model.>
12517411	The input value for "<name.>\", \"<address.>\" and/or \"<network.>\" must match its discovered value.</network.></address.></name.>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

switch

Ethernet Switch REST API

Name	Type	Description
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
model	string	Model Number.
monitoring	monitoring	
name	string	Name.

Name	Type	Description
network	string	Switch Network.
rcf_version	string	The switch reference configuration file (RCF) version.
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete an Ethernet switch

DELETE `/network/ethernet/switches/{name}`

Introduced In: 9.11

Deletes an Ethernet switch.

Related ONTAP commands

- `system switch ethernet delete`

Learn more

- DOC /network/ethernet/switches

Parameters

Name	Type	In	Required	Description
name	string	path	True	Switch Name.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
12517412	Cannot remove a discovered switch. To stop monitoring the switch, set "<monitoring.enabled>\" to \"false\".</monitoring.enabled>

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve Ethernet switch details

GET `/network/ethernet/switches/{name}`

Introduced In: 9.8

Retrieves the details of an Ethernet switch.

Related ONTAP commands

- `system switch ethernet show`

Learn more

- DOC /network/ethernet/switches

Parameters

Name	Type	In	Required	Description
name	string	path	True	Name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
model	string	Model Number.
monitoring	monitoring	
name	string	Name.
network	string	Switch Network.
rcf_version	string	The switch reference configuration file (RCF) version.

Name	Type	Description
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "address": "string",
  "model": "string",
  "monitoring": {
    "reason": "string"
  },
  "name": "string",
  "network": "string",
  "rcf_version": "RCF NX9336C-FX2 v1.13 1-CLUSTER",
  "role": [
    "cluster+storage"
  ],
  "serial_number": "string",
  "snmp": {
    "user": "string",
    "version": "string"
  },
  "version": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update an Ethernet switch

PATCH `/network/ethernet/switches/{name}`

Introduced In: 9.8

Configures monitoring settings for an Ethernet switch.

Related ONTAP commands

- `system switch ethernet modify`

Learn more

- DOC /network/ethernet/switches

Parameters

Name	Type	In	Required	Description
name	string	path	True	Switch Name

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
monitoring	monitoring	

Name	Type	Description
rcf_version	string	The switch reference configuration file (RCF) version.
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

Example request

```
{
  "address": "string",
  "monitoring": {
    "reason": "string"
  },
  "rcf_version": "RCF NX9336C-FX2 v1.13 1-CLUSTER",
  "role": [
    "cluster+storage"
  ],
  "serial_number": "string",
  "snmp": {
    "user": "string",
    "version": "string"
  },
  "version": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636148	Failed to discover SNMPv3 engine ID of the remote switch.
5636149	The "<snmp.user>\" must be a valid SNMPv3 user belonging to remote switch \"<name.>\" and must also be configured in ONTAP.</name.></snmp.user>
5636152	0.0.0.0 cannot be specified as the IP address for the "<address.>\" parameter.</address.>
8912900	Invalid IP address.
9044009	SNMPv3 client feature is not available until the effective cluster version is ONTAP 9.3 or later.
12517379	Warning: Settings updated, but the IP "<address.>\" is not reachable. Verify that the address is valid, or check the network path.</address.>
12517381	Warning: Settings updated, but the SNMP validation request timed out. Verify that the "<snmp.user>\" parameter is valid.</snmp.user>

Error Code	Description
12517383	Warning: Settings updated, but the SNMPv3 validation request timed out. Verify that the "<snmp.user>\" parameter is valid (i.e., the SNMPv3 user exists in ONTAP and on the remote switch). If the \"<snmp.user>\" parameter is valid, verify that the SNMPv3 user’s credentials are the same both in ONTAP as well as in the remote switch. If a custom engine-id was provided for the SNMPv3 user, ensure it is the same as that of the remote switch.</snmp.user></snmp.user>
12517411	The input value for "<name.>\", \"<address.>\" and/or \"<network.>\" must match its discovered value.</network.></address.></name.>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

switch

Ethernet Switch REST API

Name	Type	Description
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP • readOnly: 1 • Introduced in: 9.8 • x-nullable: true
monitoring	monitoring	
rcf_version	string	The switch reference configuration file (RCF) version.

Name	Type	Description
role	string	Switch role based on the interface configurations. Using '+' to combine multiple roles. Available role types are: cluster, multicluster, storage, multistorage, metrocluster.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve FC fabrics

Network FC fabrics endpoint overview

Overview

The Fibre Channel (FC) fabric REST APIs provide read-only access to FC network information. This includes:

- the connections between the ONTAP cluster and the FC fabric,
- the switches that comprise the fabric, and
- the zones of the active zoneset of the fabric.

Caching

Obtaining this information from the FC fabric can be time consuming. To allow the REST API to be more responsive, the APIs always return data from a cache that is updated asynchronously, but only on demand. Cache updates are triggered when the age of cached data exceeds the caller-specified maximum age as specified by the query parameter `cache.maximum_age`.

When a GET request initiates a cache refresh, the API attempts to wait for the update to complete before returning. If the cache cannot be updated before the return timeout (see query parameter `return_timeout`), the GET returns the currently cached data, but the cache update continues asynchronously. The caller may examine the returned property `cache.update_time` or `cache.age` to determine if the returned information is sufficiently fresh. If not, the caller should wait several seconds, then make a GET request again until the returned information is updated.

Examples

Fibre Channel fabric data is typically large. The numbers of rows returned in the following examples has been edited to simplify reading.

Retrieving the Fibre Channel fabrics to which the cluster is connected

This example retrieves the names of the cluster's connected Fibre Channel fabrics. It also retrieves the cache timestamp properties so that the caller can verify the currency of the data.

```
# The API:
GET /api/network/fc/fabrics

# The call:
curl -X GET 'https://<mgmt-ip>/api/network/fc/fabrics?fields=cache' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "name": "10:00:aa:bb:cc:dd:ee:ff",
    "cache": {
      "update_time": "2022-02-07T21:21:29Z",
```

```
      "age": "PT1M16S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10%3A00%3Aaa%3Abb%3Acc%3Add%3Aee%3Aff"
      }
    }
  },
  {
    "name": "10:00:ff:ee:dd:cc:bb:aa",
    "cache": {
      "update_time": "2022-02-07T21:21:29Z",
      "age": "PT1M16S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10%3A00%3Aff%3Aee%3Add%3Acc%3Abb%3Aaa"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/fc/fabrics?fields=cache"
  }
}
}
```

Retrieving all switches of a Fibre Channel fabric

This example retrieves the switches of Fibre Channel fabric `10:00:aa:bb:cc:dd:ee:ff`.

```
# The API:
GET /api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches?fields=cache'
-H 'Accept: application/hal+json'
```

```
# The response:
{
"records": [
  {
    "wwn": "10:00:1a:1b:1c:1d:1e:1f",
    "cache": {
      "update_time": "2022-02-07T21:22:00Z",
      "age": "PT45S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:1a:1b:1c:1
d:1e:1f"
      }
    }
  },
  {
    "wwn": "10:00:2a:2b:2c:2d:2e:1f",
    "cache": {
      "update_time": "2022-02-07T21:22:00Z",
      "age": "PT45S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:2a:2b:2c:2
d:2e:1f"
      }
    }
  },
  {
    "wwn": "10:00:3a:3b:3c:3d:3e:3f",
    "cache": {
      "update_time": "2022-02-07T21:22:00Z",
      "age": "PT45S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:3a:3b:3c:3
d:3e:3f"
```

```
      }
    }
  },
  {
    "wwn": "10:00:4a:4b:4c:4d:4e:4f",
    "cache": {
      "update_time": "2022-02-07T21:22:00Z",
      "age": "PT45S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:4a:4b:4c:4
d:4e:4f"
      }
    }
  },
  {
    "wwn": "10:00:5a:5b:1a:5c:5d:5e",
    "cache": {
      "update_time": "2022-02-07T21:22:00Z",
      "age": "PT45S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:5a:5b:1a:5
c:5d:5e"
      }
    }
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches?fields=cache"
  }
}
}
```

Retrieving all zones of the active zoneset of a Fibre Channel fabric

This example retrieves the zone of the active set of Fibre Channel fabric `10:00:aa:bb:cc:dd:ee:ff`.

```
# The API:
GET /api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones?fields=cache' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "name": "zone1",
    "cache": {
      "update_time": "2022-02-07T20:17:06Z",
      "age": "PT1H17M54S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones/zone1"
      }
    }
  },
  {
    "name": "zone2",
    "cache": {
      "update_time": "2022-02-07T20:17:06Z",
      "age": "PT1H17M54S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones/zone2"
      }
    }
  },
  {
    "name": "zone3",
    "cache": {
```

```
      "update_time": "2022-02-07T20:17:06Z",
      "age": "PT1H17M54S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones/zone3"
      }
    }
  },
  {
    "name": "zone4",
    "cache": {
      "update_time": "2022-02-07T20:17:06Z",
      "age": "PT1H17M54S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones/zone4"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/zones?fields=cache"
  }
}
}
```


Searching all Fibre Channel fabrics for a specific attached device identified by its WWPN

This example finds the Fibre Channel fabric, switch, and switch port to which the device with WWPN `50:0a:2a:2b:2c:2d:2e:2f` is attached. Note the use of the wildcard character in place of a fabric WWN in order to search all Fibre Channel fabrics.

```
# The API:
GET /api/network/fc/fabrics/*/switches
```

```
# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/fabrics/*/switches?fields=ports,cache&ports.attached_de
vice.wwpn=50:0a:2a:2b:2c:2d:2e:2f' -H 'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "fabric": {
      "name": "10:00:aa:bb:cc:dd:ee:ff",
      "_links": {
        "self": {
          "href":
"/api/network/fc/fabrics/10%3A00%3Aaa%3Abb%3Acc%3Add%3Aee%3Aff"
        }
      }
    },
    "wwn": "10:00:6a:6b:6c:6d:6e:6f",
    "ports": [
      {
        "slot": "0",
        "state": "online",
        "type": "f_port",
        "wwpn": "20:00:1a:1b:1c:1d:1e:1f",
        "attached_device": {
          "port_id": "0x999000",
          "wwpn": "50:0a:1a:1b:1c:1d:1e:1f"
        }
      },
      {
        "slot": "1",
        "state": "online",
        "type": "f_port",
        "wwpn": "20:01:2a:2b:1c:2d:2e:2f",
        "attached_device": {
          "port_id": "0x999100",
          "wwpn": "50:0a:2a:2b:2c:2d:2e:2f"
        }
      },
      {
        "slot": "2",
        "state": "offline",
        "type": "none",
        "wwpn": "20:02:3a:3b:3c:3d:3e:3f"
      },
```

```
      {
        "slot": "3",
        "state": "offline",
        "type": "f_port",
        "wwpn": "20:03:4a:4b:4c:4d:4e:4f",
        "attached_device": {
          "port_id": "0x999300",
          "wwpn": "50:0a:4a:4b:4c:4d:4e:4f"
        }
      },
      {
        "slot": "4",
        "state": "online",
        "type": "f_port",
        "wwpn": "20:04:5a:5b:5c:5d:5e:5f",
        "attached_device": {
          "port_id": "0x999400",
          "wwpn": "50:0a:5a:5b:5c:5d:5e:5f"
        }
      }
    ],
    "cache": {
      "update_time": "2022-02-07T21:57:29Z",
      "age": "PT4M49S",
      "is_current": "true"
    },
    "_links": {
      "self": {
        "href":
"/api/network/fc/fabrics/10:00:aa:bb:cc:dd:ee:ff/switches/10:00:6a:6b:6c:6
d:6e:6f"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/network/fc/fabrics/*/switches?fields=ports,cache&ports.attached_devi
ce.wwpn=50:0a:2a:2b:2c:2d:2e:2f"
  }
}
}
```

Retrieve FC fabrics

GET `/network/fc/fabrics`

Introduced In: 9.11

Retrieves Fibre Channel fabrics.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connections`
- `zoneset`

Related ONTAP commands

- `network fcp topology show`
- `network fcp zone show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
zoneset.name	string	query	False	Filter by zoneset.name
name	string	query	False	Filter by name
cache.is_current	boolean	query	False	Filter by cache.is_current
cache.age	string	query	False	Filter by cache.age
cache.update_time	string	query	False	Filter by cache.update_time
connections.cluster_port.name	string	query	False	Filter by connections.cluster_port.name
connections.cluster_port.wwpn	string	query	False	Filter by connections.cluster_port.wwpn

Name	Type	In	Required	Description
connections.cluster_port.uuid	string	query	False	Filter by connections.cluster_port.uuid
connections.cluster_port.node.name	string	query	False	Filter by connections.cluster_port.node.name
connections.switch.wwn	string	query	False	Filter by connections.switch.wwn
connections.switch.port.wwpn	string	query	False	Filter by connections.switch.port.wwpn
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[fabric]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cache": {
        "age": "PT3M30S",
        "update_time": "string"
      },
      "connections": [
        {
          "cluster_port": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "0a",
            "node": {
              "name": "node1"
            },
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
            "wwpn": "50:0a:11:22:33:44:55:66"
          },
          "switch": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "port": {
              "wwpn": "50:0a:a1:a2:a3:a4:a5:a6"
```

```
            },
            "wwn": "10:00:b1:b2:b3:b4:b4:b6"
          }
        }
      ],
      "name": "10:00:c1:c2:c3:c4:c5:c6",
      "zoneset": {
        "name": "zoneset1"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

node

The node on which the cluster Fibre Channel port is located.

Name	Type	Description
name	string	The name of the node on which the cluster Fibre Channel port is located.

cluster_port

The cluster Fibre Channel (FC) port that connects the FC fabric.

Name	Type	Description
_links	_links	
name	string	The name of the cluster Fibre Channel port.
node	node	The node on which the cluster Fibre Channel port is located.
uuid	string	The unique identifier of the cluster Fibre Channel port.
wwpn	string	The world wide port name (WWPN) of the cluster Fibre Channel port.

port

The port of the Fibre Channel switch to which the cluster node port is connected.

Name	Type	Description
wwpn	string	The world wide port name (WWPN) of the Fibre Channel switch port.

switch

The Fibre Channel switch to which the cluster node port is connected.

Name	Type	Description
_links	_links	
port	port	The port of the Fibre Channel switch to which the cluster node port is connected.
wwn	string	The world-wide name (WWN) of the Fibre Channel switch to which the cluster node port is attached.

connections

A connection between a cluster node Fibre Channel (FC) port and an FC switch port.

Name	Type	Description
cluster_port	cluster_port	The cluster Fibre Channel (FC) port that connects the FC fabric.
switch	switch	The Fibre Channel switch to which the cluster node port is connected.

zoneset

The active Fibre Channel zoneset in the fabric.

Name	Type	Description
name	string	The name of the Fibre Channel zoneset.

fabric

A Fibre Channel (FC) fabric REST object provides information about an FC network (fabric) connected to the cluster. Logically, the FC fabric also contains FC switches and the FC zones that comprise the active zoneset of the fabric. FC switch and zone information is not reported directly in the FC fabric REST object for reasons of scale and flexibility; they are found by querying the FC switches and FC zones REST endpoints.

Name	Type	Description
_links	_links	
cache	cache	Properties of Fibre Chanel fabric cache.
connections	array[connections]	An array of the connections between the cluster and the switches Fibre Channel fabric.
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.
zoneset	zoneset	The active Fibre Channel zoneset in the fabric.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve FC fabric switches

GET `/network/fc/fabrics/{fabric.name}/switches`

Introduced In: 9.11

Retrieves the Fibre Channel switches of a Fibre Channel fabric.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `ports`

Related ONTAP commands

- `network fcp topology show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
fabric.name	string	path	True	The WWN of the primary switch of the Fibre Channel fabric.
release	string	query	False	Filter by release
wwn	string	query	False	Filter by wwn
domain_id	integer	query	False	Filter by domain_id • Max value: 239 • Min value: 1
cache.update_time	string	query	False	Filter by cache.update_time
cache.is_current	boolean	query	False	Filter by cache.is_current
cache.age	string	query	False	Filter by cache.age
vendor	string	query	False	Filter by vendor
ports.wwpn	string	query	False	Filter by ports.wwpn
ports.state	string	query	False	Filter by ports.state
ports.slot	string	query	False	Filter by ports.slot

Name	Type	In	Required	Description
ports.attached_device.wwpn	string	query	False	Filter by ports.attached_device.wwpn
ports.attached_device.port_id	string	query	False	Filter by ports.attached_device.port_id
ports.type	string	query	False	Filter by ports.type
name	string	query	False	Filter by name
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[fc_switch]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cache": {
        "age": "PT3M30S",
        "update_time": "string"
      },
      "domain_id": 1,
      "fabric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "10:00:d1:d2:d3:d4:d5:d6"
      },
      "name": "switch1",
      "ports": [
        {
          "attached_device": {
            "port_id": 70400,
            "wwpn": "50:0a:21:22:23:24:25:26"
          },
          "slot": 1,
          "state": "online",
          "type": "string",
          "wwpn": "50:0a:31:32:33:34:35:36"
        }
      ],
      "release": "1.0.",
```

```
      "vendor": "vendor1",
      "wwn": "10:00:e1:e2:e3:e4:e5:e6"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5375053	The Fibre Channel fabric specified by name in the request URI was not found in the FC fabric cache.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

fabric

A reference to a Fibre Channel fabric.

Name	Type	Description
_links	_links	
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.

attached_device

The Fibre Channel (FC) device attached to the FC switch port.

Name	Type	Description
port_id	string	The Fibre Channel port identifier of the attach device.
wwpn	string	The world-wide port name (WWPN) of the attached device.

ports

A Fibre Channel switch port.

Name	Type	Description
attached_device	attached_device	The Fibre Channel (FC) device attached to the FC switch port.
slot	string	The slot of the Fibre Channel switch port.

Name	Type	Description
state	string	The state of the Fibre Channel switch port.
type	string	The type of the Fibre Channel switch port.
wwpn	string	The world wide port name (WWPN) of the Fibre Channel switch port.

fc_switch

A Fibre Channel switch.

Name	Type	Description
_links	_links	
cache	cache	Properties of Fibre Chanel fabric cache.
domain_id	integer	The domain identifier (ID) of the Fibre Channel (FC) switch. The domain ID is a unique identifier for the FC switch in the FC fabric.
fabric	fabric	A reference to a Fibre Channel fabric.
name	string	The logical name of the Fibre Channel switch.
ports	array[ports]	An array of the Fibre Channel (FC) switch's ports and their attached FC devices.
release	string	The firmware release of the Fibre Channel switch.
vendor	string	The vendor of the Fibre Channel switch.
wwn	string	The world-wide name (WWN) for the Fibre Channel switch.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC switch

GET `/network/fc/fabrics/{fabric.name}/switches/{wwn}`

Introduced In: 9.11

Retrieves a Fibre Channel switch.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `ports`

Related ONTAP commands

- `network fcp topology show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
fabric.name	string	path	True	The WWN of the primary switch of the Fibre Channel fabric.
wwn	string	path	True	The WWN of the Fibre Channel switch.
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
cache	cache	Properties of Fibre Chanel fabric cache.
domain_id	integer	The domain identifier (ID) of the Fibre Channel (FC) switch. The domain ID is a unique identifier for the FC switch in the FC fabric.
fabric	fabric	A reference to a Fibre Channel fabric.
name	string	The logical name of the Fibre Channel switch.

Name	Type	Description
ports	array[ports]	An array of the Fibre Channel (FC) switch's ports and their attached FC devices.
release	string	The firmware release of the Fibre Channel switch.
vendor	string	The vendor of the Fibre Channel switch.
wwn	string	The world-wide name (WWN) for the Fibre Channel switch.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cache": {
    "age": "PT3M30S",
    "update_time": "string"
  },
  "domain_id": 1,
  "fabric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "10:00:d1:d2:d3:d4:d5:d6"
  },
  "name": "switch1",
  "ports": [
    {
      "attached_device": {
        "port_id": 70400,
        "wwpn": "50:0a:21:22:23:24:25:26"
      },
      "slot": 1,
      "state": "online",
      "type": "string",
      "wwpn": "50:0a:31:32:33:34:35:36"
    }
  ],
  "release": "1.0.",
  "vendor": "vendor1",
  "wwn": "10:00:e1:e2:e3:e4:e5:e6"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5375053	The Fibre Channel fabric specified by name in the request URI was not found in the FC fabric cache.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

fabric

A reference to a Fibre Channel fabric.

Name	Type	Description
_links	_links	
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.

attached_device

The Fibre Channel (FC) device attached to the FC switch port.

Name	Type	Description
port_id	string	The Fibre Channel port identifier of the attach device.
wwpn	string	The world-wide port name (WWPN) of the attached device.

ports

A Fibre Channel switch port.

Name	Type	Description
attached_device	attached_device	The Fibre Channel (FC) device attached to the FC switch port.
slot	string	The slot of the Fibre Channel switch port.

Name	Type	Description
state	string	The state of the Fibre Channel switch port.
type	string	The type of the Fibre Channel switch port.
wwpn	string	The world wide port name (WWPN) of the Fibre Channel switch port.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve FC fabric zones

GET `/network/fc/fabrics/{fabric.name}/zones`

Introduced In: 9.11

Retrieves the zones of the active zoneset of a Fibre Channel fabric.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `members`

Related ONTAP commands

- `network fcp zone show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
fabric.name	string	path	True	The WWN of the primary switch of the Fibre Channel fabric.
members.type	string	query	False	Filter by members.type
members.name	string	query	False	Filter by members.name
cache.age	string	query	False	Filter by cache.age
cache.is_current	boolean	query	False	Filter by cache.is_current
cache.update_time	string	query	False	Filter by cache.update_time
name	string	query	False	Filter by name
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[fc_zone]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "cache": {
        "age": "PT3M30S",
        "update_time": "string"
      },
      "fabric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "10:00:d1:d2:d3:d4:d5:d6"
      },
      "members": [
        {
          "name": "10:00:12:34:56:78:9a:bc",
          "type": "port_name"
        }
      ],
      "name": "zone1"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5375053	The Fibre Channel fabric specified by name in the request URI was not found in the FC fabric cache.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

fabric

A reference to a Fibre Channel fabric.

Name	Type	Description
_links	_links	
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.

members

A Fibre Channel zone member.

Name	Type	Description
name	string	The identifying property value of the zone member. The format of this value depends on the member type: • `port_id`: A zero-filled 6-digit hexadecimal value with a 0x prefer. Example: 0x0000A0. • `port_name`: A world-wide name. Example: 10:00:12:34:56:78:9a:bc. • `domain_id_port`: A domain ID and a port ID as decimal integers separated by a slash. Example: 1/2. • `node_name`: A world-wide name. Example: 10:00:11:22:33:44:55:66. • `fabric_port_name`: A world-wide name. Example: 10:00:ab:cd:ef:12:34:56. # The following types might not report a name: • `interface` • `domain_interface` • `ip_address` • `symbolic_node_name` • `device_alias`
type	string	The type of Fibre Channel zone member. This value should be used to interpret the contents of the `name` property.

fc_zone

A Fibre Channel zone.

Name	Type	Description
_links	_links	

Name	Type	Description
cache	cache	Properties of Fibre Chanel fabric cache.
fabric	fabric	A reference to a Fibre Channel fabric.
members	array[members]	An array of Fibre Channel zone members.
name	string	The name of the Fibre Channel zone.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC fabric zone

GET `/network/fc/fabrics/{fabric.name}/zones/{name}`

Introduced In: 9.11

Retrieves a zone of the active zoneset of a Fibre Channel fabric.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `members`

Related ONTAP commands

- `network fcp zone show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
fabric.name	string	path	True	The WWN of the primary switch of the Fibre Channel fabric.
name	string	path	True	The name of a zone in the active zoneset the Fibre Channel fabric.
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
cache	cache	Properties of Fibre Chanel fabric cache.

Name	Type	Description
fabric	fabric	A reference to a Fibre Channel fabric.
members	array[members]	An array of Fibre Channel zone members.
name	string	The name of the Fibre Channel zone.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cache": {
    "age": "PT3M30S",
    "update_time": "string"
  },
  "fabric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "10:00:d1:d2:d3:d4:d5:d6"
  },
  "members": [
    {
      "name": "10:00:12:34:56:78:9a:bc",
      "type": "port_name"
    }
  ],
  "name": "zone1"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5375053	The Fibre Channel fabric specified by name in the request URI was not found in the FC fabric cache.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

fabric

A reference to a Fibre Channel fabric.

Name	Type	Description
_links	_links	
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.

members

A Fibre Channel zone member.

Name	Type	Description
name	string	The identifying property value of the zone member. The format of this value depends on the member type: • `port_id`: A zero-filled 6-digit hexadecimal value with a 0x prefer. Example: 0x0000A0. • `port_name`: A world-wide name. Example: 10:00:12:34:56:78:9a:bc. • `domain_id_port`: A domain ID and a port ID as decimal integers separated by a slash. Example: 1/2. • `node_name`: A world-wide name. Example: 10:00:11:22:33:44:55:66. • `fabric_port_name`: A world-wide name. Example: 10:00:ab:cd:ef:12:34:56. # The following types might not report a name: • `interface` • `domain_interface` • `ip_address` • `symbolic_node_name` • `device_alias`
type	string	The type of Fibre Channel zone member. This value should be used to interpret the contents of the `name` property.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC fabric

GET `/network/fc/fabrics/{name}`

Introduced In: 9.11

Retrieves a Fibre Channel fabric.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connections`
- `zoneset`

Related ONTAP commands

- `network fcp topology show`
- `network fcp zone show`

Learn more

- DOC /network/fc/fabrics

Parameters

Name	Type	In	Required	Description
name	string	path	True	The world wide name (WWN) of the primary switch of the Fibre Channel fabric.

Name	Type	In	Required	Description
cache.maximum_age	string	query	False	The maximum age of data in the Fibre Channel fabric cache before it should be refreshed from the fabric. The default is 15 minutes. • Default value: 1 • format: iso8601
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
cache	cache	Properties of Fibre Chanel fabric cache.
connections	array[connections]	An array of the connections between the cluster and the switches Fibre Channel fabric.
name	string	The world wide name (WWN) of the primary switch of the Fibre Channel (FC) fabric. This is used as a unique identifier for the FC fabric.
zoneset	zoneset	The active Fibre Channel zoneset in the fabric.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cache": {
    "age": "PT3M30S",
    "update_time": "string"
  },
  "connections": [
    {
      "cluster_port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
        "wwpn": "50:0a:11:22:33:44:55:66"
      },
      "switch": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "port": {
          "wwpn": "50:0a:a1:a2:a3:a4:a5:a6"
        },
        "wwn": "10:00:b1:b2:b3:b4:b4:b6"
      }
    }
  ],
  "name": "10:00:c1:c2:c3:c4:c5:c6",
  "zoneset": {
    "name": "zoneset1"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cache

Properties of Fibre Chanel fabric cache.

Name	Type	Description
age	string	The age of the Fibre Channel fabric data cache retrieved. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved. The value is in ISO 8601 duration format.
is_current	boolean	A boolean that indicates if the retrieved data is current relative to the `cache.maximum_age` value of the request. A value of `true` indicates that the data is no older than the requested maximum age. A value of `false` indicates that the data is older than the requested maximum age; if more current data is required, the caller should wait for some time for the cache update to complete and query the data again.

Name	Type	Description
update_time	string	The date and time at which the Fibre Channel fabric data cache retrieved was last updated. If the FC fabric data cache has not been fully updated for a newly discovered fabric, or a fabric that has been re-discovered after being purged, a value for this property will not be retrieved.

node

The node on which the cluster Fibre Channel port is located.

Name	Type	Description
name	string	The name of the node on which the cluster Fibre Channel port is located.

cluster_port

The cluster Fibre Channel (FC) port that connects the FC fabric.

Name	Type	Description
_links	_links	
name	string	The name of the cluster Fibre Channel port.
node	node	The node on which the cluster Fibre Channel port is located.
uuid	string	The unique identifier of the cluster Fibre Channel port.
wwpn	string	The world wide port name (WWPN) of the cluster Fibre Channel port.

port

The port of the Fibre Channel switch to which the cluster node port is connected.

Name	Type	Description
wwpn	string	The world wide port name (WWPN) of the Fibre Channel switch port.

switch

The Fibre Channel switch to which the cluster node port is connected.

Name	Type	Description
_links	_links	
port	port	The port of the Fibre Channel switch to which the cluster node port is connected.
wwn	string	The world-wide name (WWN) of the Fibre Channel switch to which the cluster node port is attached.

connections

A connection between a cluster node Fibre Channel (FC) port and an FC switch port.

Name	Type	Description
cluster_port	cluster_port	The cluster Fibre Channel (FC) port that connects the FC fabric.
switch	switch	The Fibre Channel switch to which the cluster node port is connected.

zoneset

The active Fibre Channel zoneset in the fabric.

Name	Type	Description
name	string	The name of the Fibre Channel zoneset.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FC network interfaces

Network FC interfaces endpoint overview

Overview

Fibre Channel (FC) interfaces are the logical endpoints for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol (FCP) or NVMe over FC (NVMe/FC).

The FC interface REST API allows you to create, delete, update, and discover FC interfaces, and obtain status information for FC interfaces.

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH request that relocates an interface. You can identify the port by supplying either the node and port names or the port UUID.

Performance monitoring

Performance of an FC interface can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the performance of an FC interface in terms of IOPS, latency, and throughput. The `metric.*` properties denote an average, whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Interface placement recommendations

The FC interface REST API can also recommend the placement (cluster nodes and FC ports) for FC interfaces for a new or existing SVM as well as evaluate caller-proposed locations for FC interfaces. This functionality is available to cluster administrators only and is accessed using `GET /network/fc/interfaces` with the `recommend` family of query parameters.

The query parameter `recommend.data_protocol` is required when getting recommendations or evaluating caller-proposed locations for FC interfaces. It identifies the type of FC interfaces to recommend. Other

`recommend` query parameters are optional and are used to modify the recommendation algorithm.

If an SVM is supplied using the query parameter `recommend.svm.name` and/or `recommend.svm.uuid`, existing FC interfaces are considered as part of the overall solution and only additionally recommended interfaces are returned. If no SVM is supplied, recommendations are returned for a new SVM.

FC fabrics connected to the cluster are discovered by the API. By default, FC interfaces are placed and evaluated for each fabric. The query parameter `recommend.fabrics.name` can be used to identify specific FC fabrics to use.

Cluster nodes supporting FC fabric connections for the specific data protocol are discovered by the API. By default, FC interfaces are placed all supported cluster nodes. Either query parameter `recommend.nodes.name` or `recommend.nodes.uuid` can be used to identify specific cluster nodes to use.

FC interfaces for the FC-NVMe data protocol are limited to two (2) interfaces per cluster node with a maximum of four (4) nodes, within a single SVM.

Placement recommendations are best effort and limited by the information available. In situations where an optimum configuration cannot be produced, the API returns the recommendations it can along with messages describing how the caller might improve the configuration. These messages are produced by evaluating the calculated FC interface layout against best practices.

The same best practice evaluation can be applied to a caller-proposed configuration by using the query parameter `recommend.proposed.locations.port.uuid` to specify the locations for proposed FC interfaces. When this query parameter is supplied, the best practice evaluation is performed using the proposed interface locations and messages are produced describing how the caller might improve the configuration.

Examples

Creating an FC interface using the port node and name to identify the location

This example uses the `return_records` query parameter to retrieve the newly created FC interface in the POST response.

```
# The API:
POST /api/network/fc/interfaces

# The call:
curl -X POST 'https://<mgmt-
ip>/api/network/fc/interfaces?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name": "lif1",
"location": { "home_port": { "name": "0a", "home_node": { "name": "node1"
} } }, "data_protocol": "fcp" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
```

```
      "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
    "name": "lif1",
    "location": {
      "home_node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "home_port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
```

```
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-
005056bba0e0"
          }
        }
      }
    },
    "enabled": true,
    "state": "down",
    "data_protocol": "fcp",
    "wwpn": "20:04:00:50:56:bb:a0:e0",
    "wwnn": "20:00:00:50:56:bb:a0:e0",
    "port_address": "9da2cb1",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-
005056bba0e0"
      }
    }
  }
]
}
```


Creating an FC interface using the port UUID to identify the location

This example uses the `return_records` query parameter to retrieve the newly created FC interface in the POST response.

```
# The API:
POST /api/network/fc/interfaces

# The call:
curl -X POST 'https://<mgmt-
ip>/api/network/fc/interfaces?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm3" }, "name": "lif2",
"location": { "home_port": { "uuid": "24bb636a-db83-11e8-9a49-
005056bb1ec6" } }, "data_protocol": "fc_nvme" }'

# The response:
```

```
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
      "name": "svm3",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
    "name": "lif2",
    "location": {
      "home_node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
          }
        }
      },
      "home_port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      },
      "node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
```

```
          }
        }
      },
      "port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      }
    },
    "enabled": true,
    "state": "down",
    "data_protocol": "fc_nvme",
    "wwpn": "20:05:00:50:56:bb:a0:e0",
    "wwnn": "20:02:00:50:56:bb:a0:e0",
    "port_address": "612e202b",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-
005056bba0e0"
      }
    }
  }
]
}
```

Retrieving all properties for all FC interfaces

This example uses the `fields` query parameter to retrieve all properties.

```
# The API:
GET /api/network/fc/interfaces

# The call:
curl -X GET 'https://<mgmt-ip>/api/network/fc/interfaces?fields=*' -H
'Accept: application/hal+json'
```

```
# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
      "name": "svm3",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
    "name": "lif2",
    "location": {
      "home_node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
          }
        }
      },
      "home_port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      },
      "node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
```

```
          }
        }
      },
      "port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      }
    },
    "enabled": true,
    "state": "down",
    "data_protocol": "fc_nvme",
    "wwpn": "20:05:00:50:56:bb:a0:e0",
    "wwnn": "20:02:00:50:56:bb:a0:e0",
    "port_address": "612e202b",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-
005056bba0e0"
      }
    }
  },
  {
    "svm": {
      "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
    "name": "lif1",
    "location": {
      "home_node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
```

```
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "home_port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-
005056bba0e0"
          }
        }
      },
      "port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-
005056bba0e0"
          }
        }
      }
    },
    "enabled": true,
    "state": "down",
```

```
    "data_protocol": "fcp",
    "wwpn": "20:04:00:50:56:bb:a0:e0",
    "wwnn": "20:00:00:50:56:bb:a0:e0",
    "port_address": "9da2cb1",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-
005056bba0e0"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/fc/interfaces?fields=*"
  }
}
}
```

Retrieving a list of selected FC interfaces

This example uses property query parameters to retrieve FC interfaces configured for the FC Protocol that are set to *up*.

```
# The API:
GET /api/network/fc/interfaces

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/interfaces?data_protocol=fcp&state=up' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
    "name": "lif1",
    "state": "up",
    "data_protocol": "fcp",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-
005056bba0e0"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/fc/interfaces?data_protocol=fcp&state=up"
  }
}
}
```

Retrieving a specific FC interface

```
# The API:
GET /api/network/fc/interfaces/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/network/fc/interfaces/cdeb5591-dec9-
11e8-a733-005056bba0e0' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
  "name": "svm3",
  "_links": {
    "self": {
      "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
    }
  }
},
"uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
"name": "lif2",
"location": {
  "home_node": {
    "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
    "name": "node3",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-005056bb1ec6"
      }
    }
  },
  "home_port": {
    "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
    "name": "1b",
    "node": {
      "name": "node3"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
      }
    }
  },
  "node": {
```

```
    "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
    "name": "node3",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-005056bb1ec6"
      }
    }
  },
  "port": {
    "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
    "name": "1b",
    "node": {
      "name": "node3"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
      }
    }
  }
},
"enabled": true,
"state": "down",
"data_protocol": "fc_nvme",
"wwpn": "20:05:00:50:56:bb:a0:e0",
"wwnn": "20:02:00:50:56:bb:a0:e0",
"port_address": "612e202b",
"metric": {
  "timestamp": "2019-04-09T05:50:15Z",
  "duration": "PT15S",
  "status": "ok",
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
```

```
    "write": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"_links": {
  "self": {
    "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-
005056bba0e0"
  }
}
}
```


Disabling an FC interface

When updating certain properties of an FC interface, the interface must first be disabled using the following:

```
# The API:
PATCH /api/network/fc/interfaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-
11e8-a733-005056bba0e0' -H 'Accept: application/hal+json' -d '{ "enabled":
false }'
```

Moving an FC interface to a new node and port

To move an FC interface to another node or port, the destination FC port must be specified in a PATCH request. Either the port UUID or node and port names can be used to identify the port.

Note that only FC interfaces configured for the FC Protocol can be moved. FC interfaces configured for NVMe/FC cannot be moved. The interface must also be set to the disabled state before being moved.

```
# The API:
PATCH /api/network/fc/interfaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-
11e8-a733-005056bba0e0' -H 'Accept: application/hal+json' -d '{
"location": { "home_port": { "uuid": "a1dc7aa5-db83-11e8-9ef7-
005056bbbbcc" } } }'
```

Deleting an FC interface

```
# The API:
DELETE /api/network/fc/interfaces/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-
11e8-a733-005056bba0e0' -H 'Accept: application/hal+json'
```

Recommending interface locations for a new SVM

This example gets recommendations for FCP network interfaces for a new SVM.

```
# The API
```

```
GET /api/network/fc/interfaces

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/interfaces?recommend.data_protocol=fcp&fields=*' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "location": {
      "home_port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-
005056bba0e0"
          }
        }
      }
    },
    "data_protocol": "fcp",
    "comment": "fabric: 55:0e:b1:a0:20:40:80:00"
  },
  {
    "location": {
      "home_port": {
        "uuid": "ad7d3915-db82-11e8-b36d-005056bb982e",
        "name": "0a",
        "node": {
          "name": "node2"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/ad7d3915-db82-11e8-b36d-
005056bb982e"
          }
        }
      }
    },
    "data_protocol": "fcp",
```

```
    "comment": "fabric: 55:0e:b1:a0:20:40:80:00"
  },
  {
    "location": {
      "home_port": {
        "uuid": "300c1dfd-db82-11e8-bd46-005056bba0e0",
        "name": "0b",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1dfd-db82-11e8-bd46-
005056bba0e0"
          }
        }
      }
    },
    "data_protocol": "fcp",
    "comment": "fabric: 55:0e:b1:a0:20:40:80:01"
  }
],
"num_records": 3,
"recommend": {
  "messages": [
    {
      "message": "The following network ports are disabled (cluster
node:port): node2:0b",
      "code": "5375959",
      "arguments": [
        {
          "message": "node2:0b"
        }
      ],
      "severity": "informational"
    }
  ]
},
"_links": {
  "self": {
    "href":
"/api/network/fc/interfaces?recommend.data_protocol=fcp&fields=*"
  }
}
}
```

Proposing interface locations for a new SVM

This example requests that caller-proposed locations for FC-NVMe interfaces on two nodes be evaluated.

```
# The API
GET /api/network/fc/interfaces

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/interfaces?&recommend.data_protocol=fc_nvme&recommend.p
roposed.locations.port.uuid=300c2786-db82-11e8-bd46-005056bba0e0,ad7d47d6-
db82-11e8-b36d-005056bb982e&fields=*' -H 'Accept: application/hal+json'

# The response:
{
"records": [
],
"num_records": 0,
"recommend": {
  "messages": [
    {
      "message": "Cluster node \"node1\" does not have the requested
number (1) of network interfaces for the following Fibre Channel fabrics:
55:0e:b1:a0:20:40:80:07.",
      "code": "5375969",
      "arguments": [
        {
          "message": "node1"
        },
        {
          "message": "1"
        },
        {
          "message": "55:0e:b1:a0:20:40:80:07"
        }
      ],
      "severity": "warning"
    },
    {
      "message": "Cluster node \"node2\" does not have the requested
number (1) of network interfaces for the following Fibre Channel fabrics:
55:0e:b1:a0:20:40:80:07.",
      "code": "5375969",
      "arguments": [
        {
          "message": "node2"
```

```
        },
        {
          "message": "1"
        },
        {
          "message": "55:0e:b1:a0:20:40:80:07"
        }
      ],
      "severity": "warning"
    },
    {
      "message": "The SVM cannot be reached from all of the Fibre Channel
(FC) fabrics to which the cluster is connected. Cluster FC fabrics:
55:0e:b1:a0:20:40:80:06, 55:0e:b1:a0:20:40:80:07. SVM FC fabrics:
55:0e:b1:a0:20:40:80:06.",
      "code": "5375970",
      "arguments": [
        {
          "message": "55:0e:b1:a0:20:40:80:06, 55:0e:b1:a0:20:40:80:07"
        },
        {
          "message": "55:0e:b1:a0:20:40:80:06"
        }
      ],
      "severity": "warning"
    },
    {
      "message": "The SVM is configured for 1 Fibre Channel (FC) fabrics.
The preferred configuration is 2 FC fabrics.",
      "code": "5375973",
      "arguments": [
        {
          "message": "1"
        },
        {
          "message": "2"
        }
      ],
      "severity": "warning"
    }
  ]
},
"_links": {
  "self": {
    "href":
"/api/network/fc/interfaces?recommend.data_protocol=fc_nvme&recommend.node
```

```
s.name=node1,node2&recommend.proposed.locations.port.uuid=300c2786-db82-
11e8-bd46-005056bba0e0,ad7d47d6-db82-11e8-b36d-005056bb982e&fields=*"
  }
}
}
```

Retrieve FC interfaces

GET `/network/fc/interfaces`

Introduced In: 9.6

Retrieves FC interfaces.

Related ONTAP commands

- `network interface show`
- `vserver fcp interface show`

Learn more

- DOC /network/fc/interfaces

Parameters

Name	Type	In	Required	Description
recommend.svm.name	string	query	False	The name of an existing SVM for which to recommend FC interfaces. If neither query parameter `recommend.svm.name` nor `recommend.svm.uuid` are provided when recommending FC interfaces, recommendations are made for a new, non-existent SVM. • Introduced in: 9.11

Name	Type	In	Required	Description
recommend.svm.uuid	string	query	False	The UUID of an existing SVM for which to recommend FC interfaces. If neither query parameter `recommend.svm.name` nor `recommend.svm.uuid` are provided when recommending FC interfaces, recommendations are made for a new, non-existent SVM. • Introduced in: 9.11
recommend.data_protocol	string	query	False	The target data protocol for which to recommend FC interfaces. This query parameter is required when recommending FC interfaces. • Introduced in: 9.11 • enum: ["fcp", "fc_nvme"]

Name	Type	In	Required	Description
recommend.interfaces_per_node	integer	query	False	The target number of interfaces per FC fabric per cluster node when recommending FC interfaces. If this query parameter is not provided, the default value is one (1). • Introduced in: 9.11 • Default value: 1 • Max value: 4 • Min value: 1
recommend.fabrics.name	array[string]	query	False	The names of the FC fabrics to target when recommending FC interfaces. If this query parameter is not provided, FC interfaces will be recommended for each FC fabric discovered. • Introduced in: 9.11

Name	Type	In	Required	Description
recommend.nodes.name	array[string]	query	False	The names of the cluster nodes to target when recommending FC interfaces. If this query parameter is not provided, FC interfaces will be recommended for all nodes that have FC network ports supporting target data protocol. Query parameters `recommend.nodes.name` and `recommend.nodes.uuid` are mutually exclusive; use either names or UUIDs to identify cluster nodes. • Introduced in: 9.11
recommend.nodes.uuid	array[string]	query	False	The UUIDs of the cluster nodes to target when recommending FC interfaces. If this query parameter is not provided, FC interfaces will be recommended for all nodes that have FC network ports supporting target data protocol. Query parameters `recommend.nodes.name` and `recommend.nodes.uuid` are mutually exclusive; use either names or UUIDs to identify cluster nodes. • Introduced in: 9.11

Name	Type	In	Required	Description
recommend.proposed.locations.port.uuid	array[string]	query	False	The UUIDs of the FC ports on which FC interfaces are proposed. A UUID may be supplied multiple times to proposed multiple FC interfaces. FC ports must be enabled, support the target data protocol and be reporting an FC fabric. • Introduced in: 9.11
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
wwpn	string	query	False	Filter by wwpn
wwnn	string	query	False	Filter by wwnn
uuid	string	query	False	Filter by uuid
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.8
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.8
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.8
port_address	string	query	False	Filter by port_address
location.port.uuid	string	query	False	Filter by location.port.uuid
location.port.node.name	string	query	False	Filter by location.port.node.name
location.port.name	string	query	False	Filter by location.port.name
location.home_node.uuid	string	query	False	Filter by location.home_node.uuid • Introduced in: 9.8

Name	Type	In	Required	Description
location.home_node.name	string	query	False	Filter by location.home_node.name • Introduced in: 9.8
location.is_home	boolean	query	False	Filter by location.is_home • Introduced in: 9.8
location.node.uuid	string	query	False	Filter by location.node.uuid
location.node.name	string	query	False	Filter by location.node.name
location.home_port.uuid	string	query	False	Filter by location.home_port.uuid • Introduced in: 9.8
location.home_port.node.name	string	query	False	Filter by location.home_port.node.name • Introduced in: 9.8
location.home_port.name	string	query	False	Filter by location.home_port.name • Introduced in: 9.8
data_protocol	string	query	False	Filter by data_protocol
name	string	query	False	Filter by name
state	string	query	False	Filter by state
comment	string	query	False	Filter by comment

Name	Type	In	Required	Description
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.8
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.8
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.8
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
recommend	recommend	Response properties specific to the FC interface placement functionality. See the *Interface placement recommendations* section of DOC /network/fc/interfaces

Name	Type	Description
records	array[fc_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "recommend": {
    "messages": [
      {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": 5375959,
        "message": "Network ports are disabled.",
        "severity": "informational"
      }
    ]
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "data_protocol": "string",
      "location": {
        "home_node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
```

```
      "home_port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "metric": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
```

```
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "fc_lif1",
      "port_address": "5060F",
      "state": "string",
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
      "wwnn": "20:00:00:50:56:b4:13:01",
```

```
        "wwpn": "20:00:00:50:56:b4:13:a8"
      }
    ]
  }
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5374938	Query parameter `recommend.data_protocol` is required when any other `recommend` query parameters are specified.
5374939	Query parameter `recommend.fabrics.name` specifies a duplicate FC fabric.
5374940	Query parameter `recommend.nodes.name` or `recommend.nodes.uuid` specifies a duplicate node.
5375953	Query parameter `recommend.fabrics.name` specifies an FC fabric to which no FC port is connected.
5375954	Query parameter `recommend.nodes.name` or `recommend.nodes.uuid` specifies a node that does not support the specified data protocol.
5375955	Query parameter `recommend.proposed.locations.port.uuid` does not specify a valid port or specifies a port that is support the specified data protocol.
5375956	Query parameter `recommend.proposed.locations.port.uuid` specifies a port that is not located on a node specified by query parameter `recommend.nodes.name` or `recommend.nodes.uuid`. If the nodes are to be constrained, only ports on those nodes may be proposed.
5375957	Query parameter `recommend.proposed.locations.port.uuid` specifies a port that is disabled.

Error Code	Description
5375958	Query parameter `recommend.proposed.locations.port.uuid` specifies a port that is not reporting a connected FC fabric.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

fc_interface_recommend_message

Name	Type	Description
arguments	array[error_arguments]	The message substitution arguments.

Name	Type	Description
code	string	The message code. Possible messages: ONTAP Error Response Codes Error Code — Description 5375959 — Network ports are disabled. 5375960 — Network ports are enabled, but not reporting a connected FC fabric. 5375961 — The limit for the number of FC network interfaces on a cluster node has been reached. 5375962 — The limit for the number of FC network interfaces on a port has been reached. 5375963 — An HA pair of cluster nodes has a discrepancy in the presence of FC ports. 5375964 — An HA pair of cluster nodes has a discrepancy in support for an FC data protocol. 5375965 — An HA pair of cluster nodes cannot be reached from the same FC fabrics. 5375966 — A cluster node cannot be reached from all of the FC fabrics from which other cluster nodes with FC interfaces in the SVM can be reached. 5375967 — The limit for the number of FC network interfaces on a cluster node has been exceeded. 5375968 — The limit for the number of FC network interfaces on an FC port has been exceeded. 5375969 — The requested number of network interfaces per FC fabric per cluster node has not been achieved.
		5375970 — The SVM cannot be

Name	Type	Description
message	string	The message text.
severity	string	The severity of the message. Message severities are as follows: • `error` - Messages reporting problems that must be corrected before creating the FC network interfaces. • `warning` - Messages indicating issues that need rectifying in order to achieve an optimal configuration. • `informational` - Messages providing relevant information for consideration.

recommend

Response properties specific to the FC interface placement functionality. See the *Interface placement recommendations* section of DOC /network/fc/interfaces

Name	Type	Description
messages	array[fc_interface_recommend_message]	Messages describing the results of a FC network interface placement operation or evaluation of caller-proposed locations.

_links

Name	Type	Description
self	href	

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

home_port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID,

or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH.

`location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.

Name	Type	Description
home_node	home_node	
home_port	home_port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates if the FC interface is currently on its home node.
node	node	
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fc_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the cluster node and port names or the port UUID.

Name	Type	Description
_links	_links	
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.

Name	Type	Description
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The name of the FC interface. Required in POST; optional in PATCH.

Name	Type	Description
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the FC interface. Required in the URL.

Name	Type	Description
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an FC interface

POST `/network/fc/interfaces`

Introduced In: 9.6

Creates an FC interface.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the FC interface.
- `name` - Name of the FC interface.
- `location.port.uuid` or both `location.port.name` and `location.port.node.name` - FC port on which to create the FC interface.
- `data_protocol` - Data protocol for the FC interface.

Default property values

If not specified in POST, the following default property values are assigned.

- `enabled` - *true*

Related ONTAP commands

- `network interface create`

Learn more

- DOC /network/fc/interfaces

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.

Name	Type	Description
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.
name	string	The name of the FC interface. Required in POST; optional in PATCH.

Name	Type	Description
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the FC interface. Required in the URL.
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Example request

```
{
  "comment": "string",
  "data_protocol": "string",
  "location": {
    "home_node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "fc_lif1",
  "port_address": "5060F",
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
recommend	recommend	Response properties specific to the FC interface placement functionality. See the *Interface placement recommendations* section of DOC /network/fc/interfaces
records	array[fc_interface]	

Example response


```
{
  "num_records": 1,
  "recommend": {
    "messages": [
      {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": 5375959,
        "message": "Network ports are disabled.",
        "severity": "informational"
      }
    ]
  },
  "records": [
    {
      "comment": "string",
      "data_protocol": "string",
      "location": {
        "home_node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "home_port": {
          "name": "0a",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "port": {
          "name": "0a",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
```

```
      },
      "name": "fc_lif1",
      "port_address": "5060F",
      "state": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
      "wwnn": "20:00:00:50:56:b4:13:01",
      "wwpn": "20:00:00:50:56:b4:13:a8"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966140	An interface with the same name already exists.
1966217	The specified port is not valid on the node provided.
2621462	The supplied SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373966	A Fibre Channel interface with the *fcp* protocol cannot be created in an SVM that is configured for NVMe.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.

Error Code	Description
5374102	The specified Fibre Channel interface cannot be created because the Fibre Channel adapter is down. Bring the adapter up and try again.
5374871	The Fibre Channel port identified by the specified UUID does not refer to the same port as that identified by the specified node name and/or port name.
5374872	If either `location.port.node.name` or `location.port.name` is supplied, both properties must be supplied.
5374873	The Fibre Channel port must be specified using either `location.port.uuid` or `location.port.node.name` and `location.port.name`.
5375057	An FC port with the provided UUID does not exist.
72089652	An NVMe service must be created before creating a Fibre Channel interface using the NVMe over FC data protocol.
72089672	The specified Fibre Channel port does not support the NVMe over FC data protocol.
72089900	A Fibre Channel interface with the *fc_nvme* protocol cannot be created in an SVM that is configured for a SAN protocol.
72089901	NVMe over Fabrics does not support more than 2 LIFs per node per SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

home_node

Name	Type	Description
name	string	
uuid	string	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

home_port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

Name	Type	Description
name	string	
uuid	string	

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC

network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH.

`location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.

Name	Type	Description
home_node	home_node	
home_port	home_port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates if the FC interface is currently on its home node.
node	node	
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fc_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the cluster node and port names or the port UUID.

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.

Name	Type	Description
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.

Name	Type	Description
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the FC interface. Required in the URL.
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

fc_interface_recommend_message

Name	Type	Description
arguments	array[error_arguments]	The message substitution arguments.

Name	Type	Description
code	string	The message code. Possible messages: ONTAP Error Response Codes Error Code — Description 5375959 — Network ports are disabled. 5375960 — Network ports are enabled, but not reporting a connected FC fabric. 5375961 — The limit for the number of FC network interfaces on a cluster node has been reached. 5375962 — The limit for the number of FC network interfaces on a port has been reached. 5375963 — An HA pair of cluster nodes has a discrepancy in the presence of FC ports. 5375964 — An HA pair of cluster nodes has a discrepancy in support for an FC data protocol. 5375965 — An HA pair of cluster nodes cannot be reached from the same FC fabrics. 5375966 — A cluster node cannot be reached from all of the FC fabrics from which other cluster nodes with FC interfaces in the SVM can be reached. 5375967 — The limit for the number of FC network interfaces on a cluster node has been exceeded. 5375968 — The limit for the number of FC network interfaces on an FC port has been exceeded. 5375969 — The requested number of network interfaces per FC fabric per cluster node has not been achieved.
		5375970 — The SVM cannot be

Name	Type	Description
message	string	The message text.
severity	string	The severity of the message. Message severities are as follows: • `error` - Messages reporting problems that must be corrected before creating the FC network interfaces. • `warning` - Messages indicating issues that need rectifying in order to achieve an optimal configuration. • `informational` - Messages providing relevant information for consideration.

recommend

Response properties specific to the FC interface placement functionality. See the *Interface placement recommendations* section of DOC /network/fc/interfaces

Name	Type	Description
messages	array[fc_interface_recommend_message]	Messages describing the results of a FC network interface placement operation or evaluation of caller-proposed locations.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an FC interface

GET `/network/fc/interfaces/{fc_interface.uuid}/metrics`

Introduced In: 9.14

Retrieves historical performance metrics for a Fibre Channel interface.

Parameters

Name	Type	In	Required	Description
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status
uuid	string	query	False	Filter by uuid
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
timestamp	string	query	False	Filter by timestamp
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration

Name	Type	In	Required	Description
fc_interface.uuid	string	path	True	The unique identifier of the Fibre Channel interface.
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the FC interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an FC interface for a specific time

GET `/network/fc/interfaces/{fc_interface.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical performance metrics for a Fibre Channel interface for a specific time.

Parameters

Name	Type	In	Required	Description
fc_interface.uuid	string	path	True	The unique identifier of the Fibre Channel interface.
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the FC interface.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FC interface

DELETE `/network/fc/interfaces/{uuid}`

Introduced In: 9.6

Deletes an FC interface.

Related ONTAP commands

- `network interface delete`

Learn more

- DOC /network/fc/interfaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53280992	The FC interface could not be deleted because it is enabled.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC interface

GET `/network/fc/interfaces/{uuid}`

Introduced In: 9.6

Retrieves an FC interface.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `network interface show`
- `vserver fcp interface show`

Learn more

- DOC /network/fc/interfaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC interface.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.

Name	Type	Description
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The name of the FC interface. Required in POST; optional in PATCH.

Name	Type	Description
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier of the FC interface. Required in the URL.

Name	Type	Description
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "data_protocol": "string",
  "location": {
    "home_node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
```

```
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "fc_lif1",
  "port_address": "5060F",
  "state": "string",
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
```

```
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
    "wwnn": "20:00:00:50:56:b4:13:01",
    "wwpn": "20:00:00:50:56:b4:13:a8"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

home_port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH.

`location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.

Name	Type	Description
home_node	home_node	
home_port	home_port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates if the FC interface is currently on its home node.
node	node	

Name	Type	Description
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an FC interface

PATCH `/network/fc/interfaces/{uuid}`

Introduced In: 9.6

Updates an FC interface.

Related ONTAP commands

- `network interface modify`

Learn more

- DOC /network/fc/interfaces

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC interface.

Request Body

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.

Name	Type	Description
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.

Name	Type	Description
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
uuid	string	The unique identifier of the FC interface. Required in the URL.
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Example request

```
{
  "comment": "string",
  "location": {
    "home_node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "fc_lif1",
  "port_address": "5060F",
  "state": "string",
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966140	An interface with the same name already exists.
1966217	The specified port is not valid on the node provided.
1966238	The node or port of an active SAN data interface cannot be changed.
1966702	The destination node is not healthy.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5374579	The SAN Kernel Agent on the node is unavailable.
5374870	A partial failure occurred; renaming the interface failed. Correct the error and resubmit the request.
5374871	The Fibre Channel port identified by the specified UUID does not refer to the same port as that identified by the specified node name and/or port name.
5374872	If either `location.port.node.name` or `location.port.name` is supplied, both properties must be supplied.
5375057	An FC port with the provided UUID does not exist.
72089674	You cannot move a Fibre Channel interface configured for the NVMe over FC data protocol.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

home_node

Name	Type	Description
name	string	
uuid	string	

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

home_port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

Name	Type	Description
name	string	
uuid	string	

port

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC

network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH.

`location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.

Name	Type	Description
home_node	home_node	
home_port	home_port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates if the FC interface is currently on its home node.
node	node	
port	port	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fc_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the cluster node and port names or the port UUID.

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to *true* (enabled) in POST.
location	location	The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its cluster node name and port name. Either the UUID or the cluster node name and port name are required for POST. To move an interface, supply either the port UUID or the cluster node name and port name in a PATCH. `location.node` and `location.port` refer to the current location of the FC interface. This can be different from `location.home_node` and `location.home_port` in instances where the FC interface has failed over to its HA partner node. The `location.node`, `location.port`, and `location.is_home` properties are not available for interfaces on the inactive side of a MetroCluster relationship.

Name	Type	Description
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
state	string	The current operational state of the FC interface. The state is set to *down* if the interface is not enabled. If the cluster node hosting the port is down or unavailable, no state value is returned.
uuid	string	The unique identifier of the FC interface. Required in the URL.
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. • example: 20:00:00:50:56:b4:13:01 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. • example: 20:00:00:50:56:b4:13:a8 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve FC port information

Network FC ports endpoint overview

Overview

Fibre Channel (FC) ports are the physical ports of FC adapters on ONTAP cluster nodes that can be connected to FC networks to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

The Fibre Channel port REST API allows you to discover FC ports, obtain status information for FC ports, and configure FC port properties. POST and DELETE requests are not supported. You must physically add and remove FC adapters to ONTAP nodes to create and remove ports from the ONTAP cluster.

Performance monitoring

Performance of an FC port can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the performance of an FC port in terms of IOPS, latency, and throughput. The `metric.*` properties denote an average, whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Retrieving all FC ports

```
# The API:
GET /api/network/fc/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/ports" -H "Accept:
application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
    "name": "0a",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
```

```
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b23f7-b047-11e8-9af3-005056bb838e",
    "name": "0b",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b23f7-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b25ba-b047-11e8-9af3-005056bb838e",
    "name": "0c",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b25ba-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b2748-b047-11e8-9af3-005056bb838e",
```

```
    "name": "0d",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b2748-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b28c2-b047-11e8-9af3-005056bb838e",
    "name": "0e",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b28c2-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b2a7b-b047-11e8-9af3-005056bb838e",
    "name": "0f",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b2a7b-b047-11e8-9af3-
005056bb838e"
      }
```

```
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b2e2b-b047-11e8-9af3-005056bb838e",
    "name": "1b",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b2e2b-b047-11e8-9af3-
005056bb838e"
      }
    }
  }
],
"num_records": 8,
"_links": {
  "self": {
    "href": "/api/network/fc/ports"
  }
}
}
```


Retrieving all FC ports with state *online*

The `state` query parameter is used to perform the query.

```
# The API:
GET /api/network/fc/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/ports?state=online" -H
"Accept: application/hal+json"

# The response:
{
```

```
"records": [
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
    "name": "0a",
    "state": "online",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b23f7-b047-11e8-9af3-005056bb838e",
    "name": "0b",
    "state": "online",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b23f7-b047-11e8-9af3-
005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
```

```
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
        }
      }
    },
    "uuid": "931b25ba-b047-11e8-9af3-005056bb838e",
    "name": "0c",
    "state": "online",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b25ba-b047-11e8-9af3-
005056bb838e"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/network/fc/ports?state=online"
  }
}
}
```

Retrieving an FC port

```
# The API:
GET /api/network/fc/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/ports/931b20f8-b047-11e8-
9af3-005056bb838e" -H "Accept: application/hal+json"

# The response:
{
"node": {
  "name": "node1",
  "uuid": "5a534a72-b047-11e8-9af3-005056bb838e",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/5a534a72-b047-11e8-9af3-005056bb838e"
```

```
      }
    }
  },
  "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
  "name": "0a",
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel
  Adapter, rev. 1.0.0, 8G)",
  "enabled": true,
  "fabric": {
    "connected": true,
    "connected_speed": 8,
    "name": "55:0e:b1:a0:20:40:80:00",
    "port_address": "52100",
    "switch_port": "ssan-g620-03:1"
  },
  "physical_protocol": "fibre_channel",
  "speed": {
    "maximum": "8",
    "configured": "auto"
  },
  "state": "online",
  "supported_protocols": [
    "fcp"
  ],
  "transceiver": {
    "form_factor": "SFP",
    "manufacturer": "ACME",
    "capabilities": [
      4,
      8
    ],
    "part_number": "1000"
  },
  "wwnn": "50:0a:09:80:bb:83:8e:00",
  "wwpn": "50:0a:09:82:bb:83:8e:00",
  "metric": {
    "timestamp": "2019-04-09T05:50:15Z",
    "duration": "PT15S",
    "status": "ok",
    "latency": {
      "other": 0,
      "total": 0,
      "read": 0,
      "write": 0
    },
    "iops": {
```

```
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"_links": {
  "self": {
    "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-005056bb838e"
  }
}
}
```


Disabling an FC port

If an active FC interface exists on an FC port, the port cannot be disabled.

```
# The API:
PATCH /api/network/fc/ports/{uuid}

# The call:
curl -X PATCH "http://<mgmt-ip>/api/network/fc/ports/931b20f8-b047-11e8-
9af3-005056bb838e" -H "Accept: application/hal+json" -d '{ "enabled":
false }'
```

Retrieve FC ports

GET `/network/fc/ports`

Introduced In: 9.6

Retrieves FC ports.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `fabric.name`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `network fcp adapter show`

Learn more

- DOC /network/fc/ports

Parameters

Name	Type	In	Required	Description
supported_protocols	string	query	False	Filter by supported_protocols
name	string	query	False	Filter by name
speed.configured	string	query	False	Filter by speed.configured
speed.maximum	string	query	False	Filter by speed.maximum

Name	Type	In	Required	Description
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.8
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.8
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.8
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
enabled	boolean	query	False	Filter by enabled

Name	Type	In	Required	Description
wwnn	string	query	False	Filter by wwnn
wwpn	string	query	False	Filter by wwpn
interface_count	integer	query	False	Filter by interface_count • Introduced in: 9.10
uuid	string	query	False	Filter by uuid
description	string	query	False	Filter by description
state	string	query	False	Filter by state
transceiver.part_number	string	query	False	Filter by transceiver.part_number
transceiver.manufacturer	string	query	False	Filter by transceiver.manufacturer
transceiver.form_factor	string	query	False	Filter by transceiver.form_factor • Introduced in: 9.8
transceiver.capabilities	integer	query	False	Filter by transceiver.capabilities
physical_protocol	string	query	False	Filter by physical_protocol
fabric.connected_speed	integer	query	False	Filter by fabric.connected_speed
fabric.name	string	query	False	Filter by fabric.name
fabric.switch_port	string	query	False	Filter by fabric.switch_port

Name	Type	In	Required	Description
fabric.port_address	string	query	False	Filter by fabric.port_address
fabric.connected	boolean	query	False	Filter by fabric.connected
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.8
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.8
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.8
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.8

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.

Name	Type	Description
records	array[fc_port]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "description": "Fibre Channel Target Adapter 0a (ACME Fibre
Channel Adapter, rev. 1.0.0, 8G)",
      "fabric": {
        "connected_speed": 16,
        "name": "string",
        "port_address": "52100A",
        "switch_port": "ssan-g620-03:33"
      },
      "interface_count": 0,
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
```

```
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "0a",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "physical_protocol": "string",
      "speed": {
        "configured": "auto",
        "maximum": "32"
      },
      "state": "online",
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "supported_protocols": [
        "string"
      ],
      "transceiver": {
```

```
        "capabilities": [
          16
        ],
        "form_factor": "string",
        "manufacturer": "Acme, Inc.",
        "part_number": "string"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "wwnn": "20:00:00:50:56:b4:13:a8",
      "wwpn": "20:00:00:50:56:b4:13:a8"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
port_address	string	The FC port address of the host bus adapter (HBA) physical port. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a six-digit hexadecimal encoded numeric value.
switch_port	string	The switch port to which the FC port is connected.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: • *sfp* - Small Form Factor - Pluggable • *sff* - Small Form Factor • *unknown* - Unknown
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

fc_port

A Fibre Channel (FC) port is the physical port of an FC adapter on an ONTAP cluster node that can be connected to an FC network to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

Name	Type	Description
_links	_links	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to *false*, all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	fabric	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.
node	node	

Name	Type	Description
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.
state	string	The operational state of the FC port. • startup - The port is booting up. • link_not_connected - The port has finished initialization, but a link with the fabric is not established. • online - The port is initialized and a link with the fabric has been established. • link_disconnected - The link was present at one point on this port but is currently not established. • offlined_by_user - The port is administratively disabled. • offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors. • node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.

Name	Type	Description
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an FC port

GET `/network/fc/ports/{fc_port.uuid}/metrics`

Introduced In: 9.14

Retrieves historical performance metrics for a Fibre Channel port.

Parameters

Name	Type	In	Required	Description
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total

Name	Type	In	Required	Description
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
timestamp	string	query	False	Filter by timestamp
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
status	string	query	False	Filter by status
uuid	string	query	False	Filter by uuid
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
fc_port.uuid	string	path	True	The unique identifier of the Fibre Channel port.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the FC port.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for an FC port for a specific time

GET `/network/fc/ports/{fc_port.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical performance metrics for a Fibre Channel port for a specific time.

Parameters

Name	Type	In	Required	Description
fc_port.uuid	string	path	True	The unique identifier of the Fibre Channel port.
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the FC port.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC port

GET `/network/fc/ports/{uuid}`

Introduced In: 9.6

Retrieves an FC port.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `fabric.name`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `network fcp adapter show`

Learn more

- DOC /network/fc/ports

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC port.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to *false*, all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	fabric	Properties of the fabric to which the FC port is attached.

Name	Type	Description
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.
node	node	
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.
state	string	The operational state of the FC port. • startup - The port is booting up. • link_not_connected - The port has finished initialization, but a link with the fabric is not established. • online - The port is initialized and a link with the fabric has been established. • link_disconnected - The link was present at one point on this port but is currently not established. • offlined_by_user - The port is administratively disabled. • offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors. • node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.

Name	Type	Description
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel
Adapter, rev. 1.0.0, 8G)",
  "fabric": {
    "connected_speed": 16,
    "name": "string",
    "port_address": "52100A",
    "switch_port": "ssan-g620-03:33"
  },
  "interface_count": 0,
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "0a",
  "node": {
    "_links": {
      "self": {
```

```
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "physical_protocol": "string",
  "speed": {
    "configured": "auto",
    "maximum": "32"
  },
  "state": "online",
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "supported_protocols": [
    "string"
  ],
  "transceiver": {
    "capabilities": [
      16
    ],
    "form_factor": "string",
    "manufacturer": "Acme, Inc.",
    "part_number": "string"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "wwnn": "20:00:00:50:56:b4:13:a8",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
port_address	string	The FC port address of the host bus adapter (HBA) physical port. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a six-digit hexadecimal encoded numeric value.
switch_port	string	The switch port to which the FC port is connected.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: • *sfp* - Small Form Factor - Pluggable • *sff* - Small Form Factor • *unknown* - Unknown
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an FC port

PATCH `/network/fc/ports/{uuid}`

Introduced In: 9.6

Updates an FC port.

Related ONTAP commands

- `network fcp adapter modify`

Learn more

- DOC /network/fc/ports

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC port.

Request Body

Name	Type	Description
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to *false*, all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	fabric	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
name	string	The FC port name.
node	node	
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.

Name	Type	Description
state	string	The operational state of the FC port. • startup - The port is booting up. • link_not_connected - The port has finished initialization, but a link with the fabric is not established. • online - The port is initialized and a link with the fabric has been established. • link_disconnected - The link was present at one point on this port but is currently not established. • offlined_by_user - The port is administratively disabled. • offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors. • node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

Example request


```
{
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel
Adapter, rev. 1.0.0, 8G)",
  "fabric": {
    "connected_speed": 16,
    "name": "string",
    "port_address": "52100A",
    "switch_port": "ssan-g620-03:33"
  },
  "interface_count": 0,
  "name": "0a",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "physical_protocol": "string",
  "speed": {
    "configured": "auto",
    "maximum": "32"
  },
  "state": "online",
  "supported_protocols": [
    "string"
  ],
  "transceiver": {
    "capabilities": [
      16
    ],
    "form_factor": "string",
    "manufacturer": "Acme, Inc.",
    "part_number": "string"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "wwnn": "20:00:00:50:56:b4:13:a8",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374085	The node where the Fibre Channel port is located is offline.
5374087	The Fibre Channel port has active Fibre Channel interfaces and cannot be disabled.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
port_address	string	The FC port address of the host bus adapter (HBA) physical port. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI). This is useful for obtaining statistics and diagnostic information from FC switches. This is a six-digit hexadecimal encoded numeric value.
switch_port	string	The switch port to which the FC port is connected.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Name	Type	Description
name	string	
uuid	string	

speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: • *sfp* - Small Form Factor - Pluggable • *sff* - Small Form Factor • *unknown* - Unknown
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

fc_port

A Fibre Channel (FC) port is the physical port of an FC adapter on an ONTAP cluster node that can be connected to an FC network to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

Name	Type	Description
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to *false*, all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	fabric	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
name	string	The FC port name.
node	node	
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.

Name	Type	Description
state	string	The operational state of the FC port. • startup - The port is booting up. • link_not_connected - The port has finished initialization, but a link with the fabric is not established. • online - The port is initialized and a link with the fabric has been established. • link_disconnected - The link was present at one point on this port but is currently not established. • offlined_by_user - The port is administratively disabled. • offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors. • node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage HTTP proxy configuration

Network http-proxy endpoint overview

Overview

Configuration of an HTTP proxy for an SVM or a Cluster IPspace.

Retrieve HTTP proxy information

The HTTP proxy GET operation retrieves all configurations for an SVM or a Cluster IPspace via '/api/cluster'.

Examples

Retrieving all fields for all HTTP proxy configurations

```
# The API:
/api/network/http-proxy

# The call:
curl -X GET "https://<mgmt-ip>/api/network/http-
proxy?fields=*&return_records=true&return_timeout=15" -H  "accept:
application/json"

# The response:
{
"records": [
  {
    "uuid": "4133a1fc-7228-11e9-b40c-005056bb4f0c",
    "svm": {
        "name": "vs1",
        "uuid": "4133a1fc-7228-11e9-b40c-005056bb4f0c"
    },
    "server": "server1.example.com",
    "port": 3128,
    "authentication_enabled": false
  },
  {
    "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c",
    "svm": {
        "name": "cluster-1",
        "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c"
    },
    "ipspace": {
        "uuid": "7433520f-7214-11e9-828c-005056bb4f0c",
        "name": "Default"
    },
    "server": "1.1.1.",
    "port": 3128,
    "authentication_enabled": true
   }
],
"num_records": 2
}
```

Retrieving the HTTP proxy configuration for a specific SVM

```
# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-11e9-
828c-005056bb4f0c" -H  "accept: application/json"

# The response
{
"uuid": "96219ce3-7214-11e9-828c-005056bb4f0c",
"svm": {
    "name": "cluster-1",
    "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c"
},
"ipspace": {
    "uuid": "7433520f-7214-11e9-828c-005056bb4f0c",
    "name": "Default"
},
"server": "1.1.1.1",
"port": 3128,
"authentication_enabled": false
}
```

Creating an HTTP proxy configuration

You can use the HTTP proxy POST operation to create an HTTP proxy configuration for the specified SVM.

Examples

Creating an HTTP proxy configuration for a particular SVM

```
# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{    \"port\":
3128,  \"server\": \"1.1.1.1\",  \"svm\": {      \"name\": \"cluster-1\"
}}"
```

Creating an HTTP proxy configuration for a particular IPspace

```
# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{  \"ipspace\":
{    \"name\": \"Default\"  },  \"port\": 3128,  \"server\": \"1.1.1.1\"}"
```

Creating an HTTP proxy configuration with authentication enabled

```
# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{  \"ipspace\":
{    \"name\": \"Default\"  },  \"port\": 3128,  \"server\": \"1.1.1.1\",
\"authentication_enabled\":true, \"username\":\"test\",
\"password\":\"test\"}"
```

Update an HTTP proxy configuration for a specified SVM

You can use the HTTP proxy PATCH operation to update the HTTP proxy configuration for the specified SVM.

Example

The following example shows how a PATCH operation is used to update an HTTP proxy configuration for a specific SVM:

```
# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-
11e9-828c-005056bb4f0c" -H  "accept: application/json" -H  "Content-Type:
application/json" -d "{    \"port\": 3128,  \"server\":
\"server2.example.com\"}"
```

Delete an HTTP proxy configuration for a specified SVM

You can use the HTTP proxy DELETE operation to delete the HTTP proxy configuration for the specified SVM.

Example

The following example shows how a DELETE operation is used to delete an HTTP proxy configuration for a specific SVM:

```
# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-
11e9-828c-005056bb4f0c" -H  "accept: application/json"
```

Retrieve HTTP proxy configurations for all SVMs and cluster IPspaces

GET `/network/http-proxy`

Introduced In: 9.7

Retrieves the HTTP proxy configurations of all the SVMs and Cluster IPspaces.

Related ONTAP commands

- `vserver http-proxy show`

Parameters

Name	Type	In	Required	Description
server	string	query	False	Filter by server
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
port	integer	query	False	Filter by port • Max value: 65535 • Min value: 1
uuid	string	query	False	Filter by uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
scope	string	query	False	Filter by scope

Name	Type	In	Required	Description
authentication_enabled	boolean	query	False	Filter by authentication_enabled • Introduced in: 9.9
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of HTTP proxy records
records	array[network_http_proxy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "port": 3128,
      "scope": "string",
      "server": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

This is mutually exclusive with IPspace during POST and PATCH.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

network_http_proxy

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	svm	This is mutually exclusive with IPspace during POST and PATCH.
uuid	string	The UUID that uniquely identifies the HTTP proxy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create an HTTP proxy configuration for an SVM or cluster IPspace

POST `/network/http-proxy`

Introduced In: 9.7

Creates an HTTP proxy configuration for an SVM or a Cluster IPspace.
Important notes:

- IPv6 must be enabled if IPv6 family addresses are specified in the "server" field.
- The server and the port combination specified using the "server" and "port" fields is validated during this operation. The validation will fail in the following scenarios:
  - The HTTP proxy service is not configured on the server.
  - The HTTP proxy service is not running on the specified port.
  - The server is unreachable.

Required properties

- SVM-scoped HTTP proxy
  - `svm.uuid` or `svm.name` - Existing SVM in which to create the HTTP proxy.
- Cluster-scoped HTTP proxy
  - `ipspace.uuid` or `ipspace.name` - Existing Cluster IPspace in which to create the HTTP proxy.
- `server` - HTTP proxy server FQDN or IP address.
- `port` - HTTP proxy server port.

Optional properties

- `authentication_enabled` - Specifies if authentication is required for the HTTP proxy server.
- `username` - Username used to authenticate with the HTTP proxy server.
- `password` - Password used to authenticate with the HTTP proxy server.

Related ONTAP commands

- `vserver http-proxy create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	svm	This is mutually exclusive with IPspace during POST and PATCH.
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".

Name	Type	Description
uuid	string	The UUID that uniquely identifies the HTTP proxy.

Example request

```
{
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "password": "string",
  "port": 3128,
  "scope": "string",
  "server": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "username": "string",
  "uuid": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of HTTP proxy records
records	array[network_http_proxy]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "password": "string",
      "port": 3128,
      "scope": "string",
      "server": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "username": "string",
      "uuid": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
26214473	HTTP proxy configuration is not valid.
26214476	The "IPspace" parameter should not be specified in the SVM context.
26214477	The specified IPspace does not exist.

Error Code	Description
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
26214481	Username and password cannot be empty when HTTP proxy authentication is enabled.
26214482	Username and password cannot be specified when HTTP proxy authentication is disabled.
26214480	One of "svm.name", "svm.uuid", "ipspace.name" or "ipspace.uuid" must be specified.
2621462	SVM "vs0" does not exist.
262186	Field "svm.name" cannot be used with field "ipspace.name".

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

This is mutually exclusive with IPspace during POST and PATCH.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

network_http_proxy

Name	Type	Description
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.

Name	Type	Description
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	svm	This is mutually exclusive with IPspace during POST and PATCH.
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete HTTP proxy configuration for an SVM or cluster IPspace

DELETE `/network/http-proxy/{uuid}`

Introduced In: 9.7

Deletes the HTTP proxy configuration of the specified SVM or Cluster IPspace.

Related ONTAP commands

- `vserver http-proxy delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	HTTP proxy UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
138281013	The HTTP Proxy cannot be deleted while in use by a cloud agent connection.
2621574	This operation is not permitted on a SVM that is configured as the destination of a Metrocluster SVM relationship.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Display HTTP proxy server, port, and IPspace information for an SVM or cluster IPspace

GET `/network/http-proxy/{uuid}`

Introduced In: 9.7

Displays the HTTP proxy server, port, and IPspace of the specified SVM or Cluster IPspace.

Related ONTAP commands

- `vserver http-proxy show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	HTTP proxy UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.

Name	Type	Description
svm	svm	This is mutually exclusive with IPspace during POST and PATCH.
uuid	string	The UUID that uniquely identifies the HTTP proxy.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": 3128,
  "scope": "string",
  "server": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

This is mutually exclusive with IPspace during POST and PATCH.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update proxy server, port, username, and password parameters

PATCH `/network/http-proxy/{uuid}`

Introduced In: 9.7

Updates the proxy server, port, username, and password parameters.
Important notes:

- IPv6 must be enabled if IPv6 family addresses are specified in the "server" field.
- The server and the port combination specified using the "server" and "port" fields is validated during this operation. The validation will fail in the following scenarios:
  - The HTTP proxy service is not configured on the server.
  - The HTTP proxy service is not running on the specified port.
  - The server is unreachable.

Related ONTAP commands

- `vserver http-proxy modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	HTTP proxy UUID

Request Body

Name	Type	Description
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.

Name	Type	Description
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

Example request

```
{
  "password": "string",
  "port": 3128,
  "scope": "string",
  "server": "string",
  "username": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
26214473	The HTTP proxy configuration is not valid.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
26214481	Username and password cannot be empty when HTTP proxy authentication is enabled.
26214482	Username and password cannot be specified when HTTP proxy authentication is disabled.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input. This is mutually exclusive with SVM during POST and PATCH.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

This is mutually exclusive with IPspace during POST and PATCH.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

network_http_proxy

Name	Type	Description
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".

Name	Type	Description
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to “svm” for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage BGP peer groups

Network IP BGP peer-groups endpoint overview

Overview

The following operations are supported:

- Creation: POST network/ip/bgp/peer-groups
- Collection Get: GET network/ip/bgp/peer-groups
- Instance Get: GET network/ip/bgp/peer-groups/{uuid}
- Instance Patch: PATCH network/ip/bgp/peer-groups/{uuid}
- Instance Delete: DELETE network/ip/bgp/peer-groups/{uuid}

Retrieving network BGP sessions information

The IP BGP peer-groups GET API retrieves and displays relevant information pertaining to the BGP peer-groups configured in the cluster. The response can contain a list of multiple BGP peer-groups or a specific peer-group. Each BGP peer-group represents a BGP session configured between a local interface and a peer router.

Examples

Retrieving all BGP peer-groups in the cluster

The following example shows the list of all BGP peer-groups configured in a cluster.

```
# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/bgp/peer-groups" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "5f22ae9d-87b2-11e9-a3a6-005056bb81a4",
    "name": "pg1",
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/5f22ae9d-87b2-11e9-a3a6-
005056bb81a4"
      }
    }
  },
  {
    "uuid": "5fd08be3-87b2-11e9-952f-005056bb2170",
    "name": "pg2",
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/5fd08be3-87b2-11e9-952f-
005056bb2170"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/ip/bgp/peer-groups"
  }
}
}
```

Retrieving a specific BGP peer-group

The following example shows the response when a specific BGP peer-group is requested. The system returns an error when there is no peer-group with the requested UUID.

```
# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/5fd08be3-
87b2-11e9-952f-005056bb2170" -H "accept: application/hal+json"

# The response:
{
"uuid": "5fd08be3-87b2-11e9-952f-005056bb2170",
"name": "pg2",
"ipspace": {
  "uuid": "84fd3375-879a-11e9-a3a6-005056bb81a4",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/84fd3375-879a-11e9-a3a6-005056bb81a4"
    }
  }
},
"local": {
  "interface": {
    "uuid": "5e76a305-87b2-11e9-952f-005056bb2170",
    "name": "bgp2",
    "ip": {
      "address": "10.10.10.2"
    }
  },
  "port": {
    "uuid": "f8ff73de-879a-11e9-952f-005056bb2170",
    "name": "e0h",
    "node": {
      "name": "node1"
    }
  }
},
"peer": {
  "address": "10.10.10.1",
  "asn": 65501
},
"state": "up",
"_links": {
  "self": {
    "href": "/api/network/ip/bgp/peer-groups/5fd08be3-87b2-11e9-952f-
005056bb2170"
```

```
  }
}
}
```

Retrieving specific fields and limiting the output using filters

The following example shows the response when a filter is applied (location.port.node.name=node1) and only certain fields are requested. Filtered fields are in the output in addition to the default fields and requested fields.

```
# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/bgp/peer-
groups?local.port.node.name=node1&fields=local.interface.ip,peer" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "5f22ae9d-87b2-11e9-a3a6-005056bb81a4",
    "name": "pg1",
    "local": {
      "interface": {
        "ip": {
          "address": "10.10.10.1"
        }
      },
      "port": {
        "node": {
          "name": "node1"
        }
      }
    },
    "peer": {
      "address": "10.10.10.2",
      "asn": 65501
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/5f22ae9d-87b2-11e9-a3a6-
```

```
005056bb81a4"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/bgp/peer-
groups?local.port.node.name=node1&fields=local.interface.ip,peer"
  }
}
}
```


Creating a BGP peer-group

The BGP peer-group POST API is used to create a peer-group as shown in the following examples.

Examples

Creating a BGP peer-group with an existing interface

The following example shows how to create a BGP peer-group between an existing interface "bgp1" and peer router with the address "10.10.10.10". The local interface "bgp1" needs to support the management-bgp service, otherwise the system returns an error.

```
# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/bgp/peer-
groups?return_records=true" -d'{"name": "newPg", "ipspace.name":"Default",
"local.interface.name": "bgp1", "peer.address":"10.10.10.10"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "e3faacc6-87cb-11e9-a3a6-005056bb81a4",
    "name": "newPg",
    "ipspace": {
      "name": "Default"
    },
    "local": {
      "interface": {
        "name": "bgp1"
      }
    },
    "peer": {
      "address": "10.10.10.10"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/e3faacc6-87cb-11e9-a3a6-
005056bb81a4"
      }
    }
  }
]
}
```

Creating a BGP peer-group and provisioning a new local interface

The following example shows how to create a BGP peer-group with any local interface. If the local interface doesn’t exist, the system will create it first before creating the peer-group.

```
# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/bgp/peer-
groups?return_records=true" -d'{"name": "newPg1",
"ipspace.name":"Default", "local": {"interface": {"name": "newlif"}, "ip":
{"address": "9.9.9.9", "netmask": "24"}, "port": {"name": "e0f", "node":
{"name": "node1"}}}, "peer.address":"10.10.10.10"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "c292f069-8872-11e9-a3a6-005056bb81a4",
    "name": "newPg1",
    "ipspace": {
      "name": "Default"
    },
    "local": {
      "interface": {
        "name": "newlif"
      },
      "port": {
        "name": "e0f",
        "node": {
          "name": "node1"
        }
      }
    },
    "peer": {
      "address": "10.10.10.10"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/c292f069-8872-11e9-a3a6-
005056bb81a4"
      }
    }
  }
]
}
```

Updating BGP peer-groups

The BGP peer-groups PATCH API is used to update attributes of a peer-group.

Examples

Updating the peer router address

The following example shows how the PATCH request changes the peer router IP address.

```
# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-
1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d
'{"peer.address": "10.10.10.20" }'
{
}
```

Updating the peer-group to a new name

The following example shows how the PATCH request renames the peer-group.

```
# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-
1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d
'{"name": "NewName"}'
{
}
```

Deleting BGP peer-groups

The BGP peer-groups DELETE API is used to delete an BGP peer-group.

Example

Deleting a BGP peer-group

The following DELETE request deletes a BGP peer-group.

```
# The API:
/api/network/ip/bgp/peer-group/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-
1f43-11e9-803e-005056a7646a"
{
}
```

Retrieve all BGP peer group details for VIP

GET `/network/ip/bgp/peer-groups`

Introduced In: 9.7

Retrieves the details of all BGP peer groups for VIP.

Related ONTAP Commands

- `network bgp peer-group show`

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
local.port.name	string	query	False	Filter by local.port.name
local.port.uuid	string	query	False	Filter by local.port.uuid
local.port.node.name	string	query	False	Filter by local.port.node.name
local.interface.name	string	query	False	Filter by local.interface.name

Name	Type	In	Required	Description
local.interface.ip.address	string	query	False	Filter by local.interface.ip.address
local.interface.uuid	string	query	False	Filter by local.interface.uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
peer.is_next_hop	boolean	query	False	Filter by peer.is_next_hop • Introduced in: 9.9
peer.md5_enabled	boolean	query	False	Filter by peer.md5_enabled • Introduced in: 9.16
peer.address	string	query	False	Filter by peer.address
peer.md5_secret	string	query	False	Filter by peer.md5_secret • Introduced in: 9.16 • maxLength: 79 • minLength: 1
peer.asn	integer	query	False	Filter by peer.asn
name	string	query	False	Filter by name
state	string	query	False	Filter by state
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[bgp_peer_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "local": {
        "interface": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "ip": {
            "address": "10.10.10.7"
          },
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "port": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "e1b",
          "node": {
            "name": "node1"
          },
```

```
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "name": "bgpv4peer",
        "peer": {
          "address": "10.10.10.7",
          "md5_enabled": 1,
          "md5_secret": "SECRET_WORD"
        },
        "state": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Either the UUID or name is supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information

Name	Type	Description
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	interface	A network interface. Either UUID or name may be supplied on input.
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.
md5_enabled	boolean	Enable or disable TCP MD5 signatures per RFC 2385.
md5_secret	string	The shared TCP MD5 secret key. This can either be given as a password or hexadecimal key.

bgp_peer_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
ipspace	ipspace	Either the UUID or name is supplied on input.
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new BGP peer group for VIP

POST `/network/ip/bgp/peer-groups`

Introduced In: 9.7

Creates a new BGP peer group for VIP. Multipath-routing is turned on cluster-wide automatically if the peer group being created results in multiple paths being available for an existing or future VIP interface.

Required properties

- `name` - Name of the peer-group to create.
- `ipspace.name` or `ipspace.uuid` or `local.port`
  - Required with local.interface.name or local.ip.address to identify a local interface

    - Optional when local.interface.uuid is specified
- `local.interface.uuid` or `local.interface.name` or `local.ip.address`
    - Required when specifying an existing local interface.
- `local.ip` and `local.port`
    - Required to create a new local interface.
- `peer.address` - IP address of the peer router

Default property values

If not specified in POST, the following default property values are assigned:

- `is_next_hop` - *false*
- `peer.md5_enabled` - *false*

Related ONTAP commands

- `network bgp peer-group create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ipspace	ipspace	Either the UUID or name is supplied on input.
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with

Name	Type	Description
state	string	State of the peer group
uuid	string	UUID of the peer group

Example request

```
{
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local": {
    "interface": {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ip": {
      "address": "10.10.10.7",
      "netmask": "24"
    },
    "port": {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7",
    "md5_enabled": 1,
    "md5_secret": "SECRET_WORD"
  },
  "state": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376963	Duplicate IP address is specified.
1966133	Since masking an address with a netmask represents an entire IP subnet, the masked and unmasked IP addresses cannot be the same.
1966267	IPv6 addresses must have a prefix length of 64.
1966269	IPv4 addresses must have a netmask length between 1 and 32.
1967082	IPspace name and UUID must match if both are given.
1967155	The specified local.port.name does not match the location.port.name for the specified local.interface.
1967156	The specified local.port.node.name does not match the location.port.node.name for the specified local.interface.
1967157	The specified local.port.uuid does not match the location.port.uuid for the specified local.interface.
1967158	The specified local.interface.name does not exist in the associated IPspace. local.ip.address and local.ip.netmask are required to create a new LIF.
1967159	local.interface does not support management-bgp service.
1967160	The specified local.interface.name does not match the specified interface name of local.interface.uuid.
1967161	The specified local.interface.uuid does not exist in the specified IPspace.
1967162	Either local.interface or local.ip and local.port are required to specify a local LIF.
1967163	The specified local.port.name does not match the specified port name of local.port.uuid.

Error Code	Description
1967164	The specified local.port.node.name does not match the specified node name of local.port.uuid.
1967165	The specified local.port does not exist.
1967166	ipspace.uuid or ipspace.name must be provided with local.interface.name together to identify a LIF.
1967167	Internal error. Failed to update BGP configuration for node. Retry the command, if necessary.
1967168	Internal error. Failed to create a VIP port for IPspace on node. Retry the command, if necessary.
1967169	Internal error. BGP configuration changed during the operation. Retry the command, if necessary.
1967170	Internal error. VIP port configuration changed during the operation. Retry the command, if necessary.
1967171	Internal error. Fail to access or update BGP peer group. Retry the command, if necessary.
1967172	Peer group could not be updated because IPspace does not exist. Retry the command, if necessary.
1967173	The specified local.ip.address does not match the address for the specified local.interface.
1967174	The specified local.ip.netmask does not match the netmask for the specified local.interface.
1967176	The specified local.interface.name does not exist in the associated IPspace. local.port.name, local.port.node.name, or local.port.uuid is required to create a new LIF.
1967177	Internal error. Failed to access the local interface. Retry the command, if necessary.
1967178	The IPv6 address specified with local.ip.address is not supported because it is link-local, multicast, v4-compatible, v4-mapped, loopback or "::".
1967179	The IPv4 address specified with local.ip.address is not supported because it is multicast, loopback or 0.0.0.0.
1967187	Configuring 4 bytes peer.asn requires an effective cluster version of 9.9.1 or later.
1967188	Configuring peer address as a next hop requires an effective cluster version of 9.9.1 or later.
1967189	The parameter peer.asn can’t be zero.
1967192	Configuring peer.md5_enabled requires an effective cluster version of 9.16.1 or later.
1967193	Configuring peer.md5_enabled requires the peer.md5_secret parameter.

Error Code	Description
1967194	Configuring peer.md5_secret requires that peer.md5_enabled is set to true.
53281985	Internal error. Failed to update BGP peer group because BGP LIF moved during the operation. Wait a few minutes and try the command again.
53282006	BGP peer group could not be updated to use a peer address because the value provided is not a valid peer address. If necessary, try the command again with a routable host address.
53282007	BGP peer group could not be updated to use a peer address because the address represents a different address family to the address of the associated BGP LIF. If necessary, try the command again with a matching address family.
53282018	Failed to create BGP peer group because an existing peer group has already established a BGP session between LIF and peer address. If necessary, try the command again with a different BGP LIF or a different peer address.
53282021	IPsec must be enabled to use TCP MD5 in BGP sessions with a BGP peer-group.
53282024	peer.md5_secret should be 1-80 bytes.
53282025	peer.md5_secret should have an even length.
53282026	The hex format of peer.md5_secret should have only hex string starting with '0x'.
53282027	peer.md5_secret should be 1-79 characters.
53282028	peer.md5_secret supports only printable ASCII characters such as numbers, alphabets, or special characters.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Either the UUID or name is supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

ip

IP information

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	interface	A network interface. Either UUID or name may be supplied on input.
ip	ip	IP information to create a new interface.
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.
md5_enabled	boolean	Enable or disable TCP MD5 signatures per RFC 2385.
md5_secret	string	The shared TCP MD5 secret key. This can either be given as a password or hexadecimal key.

bgp_peer_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
ipspace	ipspace	Either the UUID or name is supplied on input.
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a BGP peer group for VIP

DELETE `/network/ip/bgp/peer-groups/{uuid}`

Introduced In: 9.7

Deletes a BGP peer group for VIP.

Related ONTAP commands

- `network bgp peer-group delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the peer group

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53282019	Internal error. Failed to remove BGP peer group on node. Wait a few minutes and try the command again.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve details of a BGP peer group for VIP

GET `/network/ip/bgp/peer-groups/{uuid}`

Introduced In: 9.7

Retrieves details of a BGP peer group for VIP.

Related ONTAP commands

- `network bgp peer-group show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the peer group
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
ipspace	ipspace	Either the UUID or name is supplied on input.
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

Example response

```
{
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local": {
    "interface": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7",
    "md5_enabled": 1,
    "md5_secret": "SECRET_WORD"
  },
  "state": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Either the UUID or name is supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	interface	A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.
md5_enabled	boolean	Enable or disable TCP MD5 signatures per RFC 2385.
md5_secret	string	The shared TCP MD5 secret key. This can either be given as a password or hexadecimal key.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a BGP peer group for VIP

PATCH `/network/ip/bgp/peer-groups/{uuid}`

Introduced In: 9.7

Updates a BGP peer group for VIP.

Related ONTAP commands

- `network bgp peer-group modify`
- `network bgp peer-group rename`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the peer group

Request Body

Name	Type	Description
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

Example request

```
{
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7",
    "md5_enabled": 1,
    "md5_secret": "SECRET_WORD"
  },
  "state": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1967171	Internal error. Fail to access or update BGP peer group. Retry the command, if necessary.
1967188	Configuring peer address as a next hop requires an effective cluster version of 9.9.1 or later.
1967192	Configuring peer.md5_enabled requires an effective cluster version of 9.16.1 or later.
1967193	Configuring peer.md5_enabled requires the peer.md5_secret parameter.
1967194	Configuring peer.md5_secret requires that peer.md5_enabled is set to true.
53281998	Failed to rename the BGP peer group because that name is already assigned to a different peer group in the IPspace.
53282006	BGP peer group could not be updated to use a peer address because the value provided is not a valid peer address. If necessary, try the command again with a routable host address.

Error Code	Description
53282007	BGP peer group could not be updated to use a peer address because the address represents a different address family to the address of the associated BGP LIF. If necessary, try the command again with a matching address family.
53282018	Failed to create BGP peer group because an existing peer group has already established a BGP session between LIF and peer address. If necessary, try the command again with a different BGP LIF or a different peer address.
53282020	To utilize the peer as the next hop, the peer IP address must be within the same subnet as the BGP LIF.
53282021	IPsec must be enabled to use TCP MD5 in BGP sessions with a BGP peer-group.
53282024	peer.md5_secret should be 1-80 bytes.
53282025	peer.md5_secret should have an even length.
53282026	The hex format of peer.md5_secret should only contain a hex string starting with '0x'. The specified peer.md5-secret contains non-hex characters.
53282027	peer.md5_secret should be 1-79 characters.
53282028	peer.md5_secret supports only printable ASCII characters such as numbers, alphabets, or special characters.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Either the UUID or name is supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

ip

IP information

interface

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address
is_next_hop	boolean	Use peer address as next hop.
md5_enabled	boolean	Enable or disable TCP MD5 signatures per RFC 2385.
md5_secret	string	The shared TCP MD5 secret key. This can either be given as a password or hexadecimal key.

bgp_peer_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network IP interfaces

Network IP interfaces endpoint overview

Overview

The following operations are supported:

- Creation: POST network/ip/interfaces
- Collection Get: GET network/ip/interfaces
- Instance Get: GET network/ip/interfaces/{uuid}
- Instance Patch: PATCH network/ip/interfaces/{uuid}
- Instance Delete: DELETE network/ip/interfaces/{uuid}

Retrieving network interface information

The IP interfaces GET API retrieves and displays relevant information pertaining to the interfaces configured in the cluster. The response can contain a list of multiple interfaces or a specific interface. The fields returned in the response vary for different interfaces and configurations.

Examples

Retrieving all interfaces in the cluster

The following example shows the list of all interfaces configured in a cluster.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/interfaces" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "14531286-59fc-11e8-ba55-005056b4340f",
    "name": "user-cluster-01_mgmt1",
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/14531286-59fc-11e8-ba55-
005056b4340f"
      }
    }
  },
  {
    "uuid": "145318ba-59fc-11e8-ba55-005056b4340f",
```

```
    "name": "user-cluster-01_clus2",
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/145318ba-59fc-11e8-ba55-
005056b4340f"
      }
    }
  },
  {
    "uuid": "14531e45-59fc-11e8-ba55-005056b4340f",
    "name": "user-cluster-01_clus1",
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/14531e45-59fc-11e8-ba55-
005056b4340f"
      }
    }
  },
  {
    "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
    "name": "cluster_mgmt",
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-
005056b4340f"
      }
    }
  },
  {
    "uuid": "c670707c-5a11-11e8-8fcb-005056b4340f",
    "name": "lif1",
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/c670707c-5a11-11e8-8fcb-
005056b4340f"
      }
    }
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces"
  }
}
}
```

Retrieving a specific Cluster-scoped interface

The following example shows the response when a specific Cluster-scoped interface is requested. The system returns an error when there is no interface with the requested UUID. SVM information is not returned for Cluster-scoped interfaces.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/interfaces/245979de-59fc-
11e8-ba55-005056b4340f" -H "accept: application/hal+json"

# The response:
{
"uuid": "245979de-59fc-11e8-ba55-005056b4340f",
"name": "cluster_mgmt",
"ip": {
  "address": "10.63.41.6",
  "netmask": "18",
  "family": "ipv4",
},
"enabled": true,
"state": "up",
"scope": "cluster",
"ipspace": {
  "uuid": "114ecfb5-59fc-11e8-ba55-005056b4340f",
  "name": "Default",
  "_links": {
    "self": {
            "href": "/api/network/ipspaces/114ecfb5-59fc-11e8-ba55-
005056b4340f"
    }
  }
},
"services": [
  "management_core",
  "management_autosupport",
  "management_access"
],
"location": {
  "is_home": true,
  "auto_revert": false,
  "failover": "broadcast_domain_only",
  "node": {
```

```
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-005056acfcbb"
      }
    }
  },
  "port": {
    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-
005056acfcbb"
      }
    }
  },
  "home_node": {
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-005056acfcbb"
      }
    }
  },
  "home_port": {
    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-
005056acfcbb"
      }
    }
  }
},
"service_policy": {
  "uuid": "9e0f4151-141b-11e9-851e-005056ac1ce0",
```

```
  "name": "default-management"
},
"vip": false,
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-
005056b4340f"
  }
}
}
```

Retrieving a specific SVM-scoped interface using a filter

The following example shows the response when a specific SVM-scoped interface is requested. The SVM object is only included for SVM-scoped interfaces.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ip/interfaces?name=lif1&fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "c670707c-5a11-11e8-8fcb-005056b4340f",
    "name": "lif1",
    "ip": {
      "address": "10.10.10.11",
      "netmask": "24",
      "family": "ipv4",
    },
    "enabled": true,
    "state": "up",
    "scope": "svm",
    "ipspace": {
      "uuid": "114ecfb5-59fc-11e8-ba55-005056b4340f",
      "name": "Default",
      "_links": {
        "self": {
```

```
          "href": "/api/network/ipspaces/114ecfb5-59fc-11e8-ba55-
005056b4340f"
        }
      }
    },
    "svm": {
      "uuid": "c2134665-5a11-11e8-8fcb-005056b4340f",
      "name": "user_vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/c2134665-5a11-11e8-8fcb-005056b4340f"
        }
      }
    },
    "services": [
      "data_core",
      "data_nfs",
      "data_cifs",
      "data_flexcache"
    ],
    "location": {
      "is_home": true,
      "auto_revert": false,
      "failover": "broadcast_domain_only",
      "node": {
        "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
        "name": "user-cluster-01-a",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-
005056acfcbb"
          }
        }
      },
      "port": {
        "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
        "name": "e0d",
        "node": {
          "name": "user-cluster-01-a"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-
005056acfcbb"
          }
        }
```

```
      },
      "home_node": {
        "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
        "name": "user-cluster-01-a",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-
005056acfcbb"
          }
        }
      },
      "home_port": {
        "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
        "name": "e0d",
        "node": {
          "name": "user-cluster-01-a"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-
005056acfcbb"
          }
        }
      }
    },
    "service_policy": {
      "uuid": "9e53525f-141b-11e9-851e-005056ac1ce0",
      "name": "default-data-files"
    },
    "vip": false,
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/c670707c-5a11-11e8-8fcb-
005056b4340f"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces?name=lif1&fields=*"
  }
}
}
```

Retrieving specific fields and limiting the output using filters

The following example shows the response when a filter is applied (location.home_port.name=e0a) and only certain fields are requested. Filtered fields are in the output in addition to the default fields and requested fields.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ip/interfaces?location.home_port.name=e0a&fields=location.
home_node.name,service_policy.name,ip.address,enabled" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "1d1c9dc8-4f17-11e9-9553-005056ac918a",
    "name": "user-cluster-01-a_clus1",
    "ip": {
      "address": "192.168.170.24"
    },
    "enabled": true,
    "location": {
      "home_node": {
        "name": "user-cluster-01-a"
      },
      "home_port": {
        "name": "e0a"
      }
    },
    "service_policy": {
      "name": "default-cluster"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/1d1c9dc8-4f17-11e9-9553-
005056ac918a"
      }
    }
  },
  {
    "uuid": "d07782c1-4f16-11e9-86e7-005056ace7ee",
```

```
    "name": "user-cluster-01-b_clus1",
    "ip": {
      "address": "192.168.170.22"
    },
    "enabled": true,
    "location": {
      "home_node": {
        "name": "user-cluster-01-b"
      },
      "home_port": {
        "name": "e0a"
      }
    },
    "service_policy": {
      "name": "default-cluster"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/d07782c1-4f16-11e9-86e7-
005056ace7ee"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href":
"/api/network/ip/interfaces?location.home_port.name=e0a&fields=location.ho
me_node.name,service_policy.name,ip.address,enabled"
  }
}
}
```


Creating IP interfaces

You can use the IP interfaces POST API to create IP interfaces as shown in the following examples.

Examples

Creating a Cluster-scoped IP interface using names

The following example shows the record returned after the creation of an IP interface on "e0d".

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "cluster_mgmt", "ip": { "address":
"10.63.41.6", "netmask": "18" }, "enabled": true, "scope": "cluster",
"ipspace": { "name": "Default" }, "location": { "auto_revert": false,
"failover": "broadcast_domain_only", "home_port": { "name": "e0d", "node":
{ "name": "user-cluster-01-a" } } }, "service_policy": { "name": "default-
management" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
    "name": "cluster_mgmt",
    "ip": {
      "address": "10.63.41.6",
      "netmask": "18"
    },
    "enabled": true,
    "scope": "cluster",
    "ipspace": {
      "name": "Default"
    },
    "location": {
      "auto_revert": false,
      "failover": "broadcast_domain_only",
      "home_port": {
        "name": "e0d",
        "node": {
          "name": "user-cluster-01-a"
        }
      },
    },
    "service_policy": {
      "name": "default-management"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-
```

```
005056b4340f"
      }
    }
  }
]
}
```

Creating a SVM-scoped IP interface using a mix of parameter types

The following example shows the record returned after the creation of a IP interface by specifying a broadcast domain as the location.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "Data1", "ip": { "address":
"10.234.101.116", "netmask": "255.255.240.0" }, "enabled": true, "scope":
"svm", "svm": { "uuid": "137f3618-1e89-11e9-803e-005056a7646a" },
"location": { "auto_revert": true, "broadcast_domain": { "name": "Default"
} }, "service_policy": { "name": "default-data-files" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "80d271c9-1f43-11e9-803e-005056a7646a",
    "name": "Data1",
    "ip": {
      "address": "10.234.101.116",
      "netmask": "20"
    },
    "enabled": true,
    "scope": "svm",
    "svm": {
      "uuid": "137f3618-1e89-11e9-803e-005056a7646a",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/137f3618-1e89-11e9-803e-005056a7646a"
```

```
        }
      }
    },
    "location": {
      "auto_revert": true
    },
    "service_policy": {
      "name": "default-data-files"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-
005056a7646a"
      }
    }
  }
]
}
```


Creating a Cluster-scoped IP interface without specifying the scope parameter

The following example shows the record returned after creating an IP interface on "e0d" without specifying the scope parameter. The scope is "cluster" if an "svm" is not specified.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "cluster_mgmt", "ip": { "address":
"10.63.41.6", "netmask": "18" }, "enabled": true, "ipspace": { "name":
"Default" }, "location": { "auto_revert": false, "home_port": { "name":
"e0d", "node": { "name": "user-cluster-01-a" } } }, "service_policy": {
"name": "default-management" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
    "name": "cluster_mgmt",
```

```
    "ip": {
      "address": "10.63.41.6",
      "netmask": "18"
    },
    "enabled": true,
    "scope": "cluster",
    "ipspace": {
      "name": "Default"
    },
    "location": {
      "auto_revert": false,
      "home_port": {
        "name": "e0d",
        "node": {
          "name": "user-cluster-01-a"
        }
      }
    },
    "service_policy": {
      "name": "default-management"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-
005056b4340f"
      }
    }
  }
]
}
```


Creating an SVM-scoped IP interface without specifying the scope parameter

The following example shows the record returned after creating an IP interface on "e0d" without specifying the scope parameter. The scope is "svm" if the "svm" field is specified.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "Data1", "ip": { "address":
```

```
"10.234.101.116", "netmask": "255.255.240.0" }, "enabled": true, "svm": {
"uuid": "137f3618-1e89-11e9-803e-005056a7646a" }, "location": {
"auto_revert": true, "broadcast_domain": { "name": "Default" } },
"service_policy": { "name": "default-data-files" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "80d271c9-1f43-11e9-803e-005056a7646a",
    "name": "Data1",
    "ip": {
      "address": "10.234.101.116",
      "netmask": "20"
    },
    "enabled": true,
    "scope": "svm",
    "svm": {
      "uuid": "137f3618-1e89-11e9-803e-005056a7646a",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svms/137f3618-1e89-11e9-803e-005056a7646a"
        }
      }
    },
    "location": {
      "auto_revert": true
    },
    "service_policy": {
      "name": "default-data-files"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-
005056a7646a"
      }
    }
  }
]
}
```

Creating an SVM-scoped IP interface using a subnet

The following example shows the record returned after the creation of a IP interface by allocating an IP address from a subnet.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "Data1", "subnet": { "name":
"Subnet10" }, "enabled": true, "scope": "svm", "svm": { "uuid": "137f3618-
1e89-11e9-803e-005056a7646a" }, "location": { "auto_revert": true,
"broadcast_domain": { "name": "Default" } }, "service_policy": { "name":
"default-data-files" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "80d271c9-1f43-11e9-803e-005056a7646a",
    "name": "Data1",
    "enabled": true,
    "scope": "svm",
    "svm": {
      "uuid": "137f3618-1e89-11e9-803e-005056a7646a",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/137f3618-1e89-11e9-803e-005056a7646a"
        }
      }
    },
    "location": {
      "auto_revert": true
    },
    "service_policy": {
      "name": "default-data-files"
    },
    "subnet": {
      "name": "testSubnet"
    },
    "_links": {
```

```
      "self": {
        "href": "/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-
005056a7646a"
      }
    }
  }
]
}
```

Updating IP interfaces

You can use the IP interfaces PATCH API to update the attributes of an IP interface.

Examples

Updating the auto revert flag of an IP interface

The following example shows how the PATCH request changes the auto revert flag to 'false'.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-
11e9-803e-005056a7646a" -H "accept: application/hal+json" -d '{
"location": { "auto_revert": "false" } }'
{
}
```

Updating the service policy of an IP interface

The following example shows how the PATCH request changes the service policy to 'default-management'.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-
11e9-803e-005056a7646a" -H "accept: application/hal+json" -d '{
"service_policy": { "name": "default-management" }}'
{
}
```

Deleting IP interfaces

You can use the IP interfaces DELETE API to delete an IP interface in the cluster.

Example

Deleting an IP Interface

The following DELETE request deletes a network IP interface.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-
11e9-803e-005056a7646a"
{
}
```

Retrieve all IP interface details

GET `/network/ip/interfaces`

Introduced In: 9.6

Retrieves the details of all IP interfaces.

Related ONTAP Commands

- `network interface show`

Parameters

Name	Type	In	Required	Description
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
ddns_enabled	boolean	query	False	Filter by ddns_enabled • Introduced in: 9.9
vip	boolean	query	False	Filter by vip

Name	Type	In	Required	Description
name	string	query	False	Filter by name
services	string	query	False	Filter by services
scope	string	query	False	Filter by scope
dns_zone	string	query	False	Filter by dns_zone • Introduced in: 9.9
uuid	string	query	False	Filter by uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
subnet.uuid	string	query	False	Filter by subnet.uuid • Introduced in: 9.11
subnet.name	string	query	False	Filter by subnet.name • Introduced in: 9.11
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
location.home_node.uuid	string	query	False	Filter by location.home_node.uuid
location.home_node.name	string	query	False	Filter by location.home_node.name
location.node.uuid	string	query	False	Filter by location.node.uuid

Name	Type	In	Required	Description
location.node.name	string	query	False	Filter by location.node.name
location.failover	string	query	False	Filter by location.failover
location.home_port.name	string	query	False	Filter by location.home_port.name
location.home_port.uuid	string	query	False	Filter by location.home_port.uuid
location.home_port.node.name	string	query	False	Filter by location.home_port.node.name
location.port.name	string	query	False	Filter by location.port.name
location.port.uuid	string	query	False	Filter by location.port.uuid
location.port.node.name	string	query	False	Filter by location.port.node.name
location.is_home	boolean	query	False	Filter by location.is_home
location.auto_revert	boolean	query	False	Filter by location.auto_revert
state	string	query	False	Filter by state
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
probe_port	integer	query	False	Filter by probe_port • Introduced in: 9.10
rdma_protocols	string	query	False	Filter by rdma_protocols • Introduced in: 9.10
ip.family	string	query	False	Filter by ip.family
ip.netmask	string	query	False	Filter by ip.netmask
ip.address	string	query	False	Filter by ip.address
service_policy.uuid	string	query	False	Filter by service_policy.uuid

Name	Type	In	Required	Description
service_policy.name	string	query	False	Filter by service_policy.name
recommend.svm.uuid	string	query	False	The UUID of an existing SVM for which to recommend IP interfaces. • Introduced in: 9.16
recommend.svm.name	string	query	False	The name of an existing SVM for which to recommend IP interfaces. • Introduced in: 9.16
recommend.ipspace.uuid	string	query	False	The UUID of an existing IPspace for which to recommend IP interfaces. • Introduced in: 9.16
recommend.ipspace.name	string	query	False	The name of an existing IPspace for which to recommend IP interfaces. • Introduced in: 9.16
recommend.service_policy.uuid	string	query	False	The UUID of an IP service policy for which to recommend IP interfaces. • Introduced in: 9.16

Name	Type	In	Required	Description
recommend.service_policy.name	string	query	False	The name of an IP service policy for which to recommend IP interfaces. • Introduced in: 9.16
recommend.ip.family	string	query	False	The name of an IP Address Family for which to recommend IP interfaces. Unless ipv6 is specified, the default value is ipv4. • Introduced in: 9.16 • Default value: 1 • enum: ["ipv4", "ipv6"]
recommend.location.broadcast_domain.uuid	string	query	False	The UUID of an existing broadcast domain for which to recommend IP interfaces. • Introduced in: 9.16
recommend.location.broadcast_domain.name	string	query	False	The name of an existing broadcast domain for which to recommend IP interfaces. • Introduced in: 9.16
recommend.subnet.uuid	string	query	False	The UUID of an existing subnet for which to recommend IP interfaces. • Introduced in: 9.16

Name	Type	In	Required	Description
recommend.subnet.name	string	query	False	The name of an existing subnet for which to recommend IP interfaces. • Introduced in: 9.16
recommend.interfaces_per_node	integer	query	False	The number of IP interfaces to recommend per node. • Introduced in: 9.16
recommend.location.port.rdma_protocol	string	query	False	The RDMA protocol supported on locations for which to recommend IP interfaces. • Introduced in: 9.17
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
recommend	recommend	Response properties specific to the LIF recommendation functionality.
records	array[ip_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "recommend": {
    "messages": [
      {}
    ]
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "dns_zone": "storage.company.com",
      "fail_if_subnet_conflicts": true,
      "ip": {
        "address": "10.10.10.7",
        "family": "string",
        "netmask": "24"
      },
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "location": {
        "failover": "string",
        "home_node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
```

```
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "home_port": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "port": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
```

```
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "dataLif1",
      "probe_port": 64001,
      "rdma_protocols": [
        "roce"
      ],
      "scope": "string",
      "service_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default-intercluster",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "services": [
        "data_nfs"
      ],
      "state": "string",
      "statistics": {
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "subnet": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "subnet1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
53282769	Not all nodes support enabling the LIF recommendations feature.
53282770	No matching subnets are configured in IPspace.
53282772	Not enough available IPs in subnet.
53282773	Not enough locations available on node for subnet.
53282774	The specified SVM UUID is invalid.
53282775	The specified SVM name is invalid.
53282776	The specified SVM name and UUID do not match.
53282777	The specified SVM does not exist in the IPspace.
53282778	The specified SVM does not exist in the IPspace.
53282779	The specified IPspace UUID is invalid.
53282780	The specified IPspace name is invalid.
53282781	The specified IPspace UUID and name do not match.
53282782	The specified service policy UUID does not exist.
53282783	THe specified service policy UUID and name do not match.
53282784	The specified service policy does not exist in the SVM.

Error Code	Description
53282785	The specified service policy does not exist in the IPspace.
53282786	The specified broadcast domain does not exist.
53282787	The specified broadcast domain UUID and name do not match.
53282788	The specified broadcast domain UUID does not exist in the IPspace.
53282789	The specified broadcast domain name does not exist in the IPspace.
53282790	The specified subnet UUID does not exist.
53282791	The specified subnet UUID and name do not match.
53282792	The specified subnet does not exist in the IPspace.
53282793	The specified subnet does not match the specified broadcast domain.
53282794	The specified subnet name does not exist in the IPspace.
53282795	The specified subnet name does not exist in the broadcast domain.
53282796	The specified SVM has a type that is not supported.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

ip_interface_recommend_message

recommend

Response properties specific to the LIF recommendation functionality.

Name	Type	Description
messages	array[ip_interface_recommend_message]	Messages describing the results of a LIF recommendation request.

_links

Name	Type	Description
self	href	

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
_links	_links	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

Name	Type	Description
name	string	Name of node on which the port is located.

home_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
failover	string	Policy that defines where an interface is permitted to move on failover. The policy named “default” implements the recommended best practice for NAS LIFs on the current platform and cluster, and was known as “system_defined” in the CLI.
home_node	home_node	
home_port	home_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	node	
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the interface.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

service_policy

Name	Type	Description
_links	_links	
name	string	
uuid	string	

throughput_raw

Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
_links	_links	
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_interface

Name	Type	Description
_links	_links	
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	ip_info	IP information
ipspace	ipspace	Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	metric	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	statistics	The real time I/O statistics for the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new cluster-scoped or SVM-scoped interface

POST `/network/ip/interfaces`

Introduced In: 9.6

Creates a new Cluster-scoped or SVM-scoped interface.

Required properties

- `name` - Name of the interface to create.
- `ip` or `subnet`
  - `ip.address` - IP address for the interface.
  - `ip.netmask` - IP subnet of the interface.
  - `subnet.uuid` or `subnet.name`
- `ipspace.name` or `ipspace.uuid`

    - Required for Cluster-scoped interfaces.
    - Optional for SVM-scoped interfaces.
- `svm.name` or `svm.uuid`
    - Required for an SVM-scoped interface.
    - Invalid for a Cluster-scoped interface.
- If a LIF in the subnet of the specified IP address does not already exist, a location.home_port, a location.home_node, or a location.broadcast_domain needs to be provided.

Recommended property values

- `service_policy`
    - `for SVM scoped interfaces`
        - *default-data-files* for interfaces carrying file-oriented NAS data traffic
        - *default-data-blocks* for interfaces carrying block-oriented SAN data traffic
        - *default-data-iscsi* for interfaces carrying iSCSI data traffic
        - *default-management* for interfaces carrying SVM management requests
    - `for Cluster scoped interfaces`
        - *default-intercluster* for interfaces carrying cluster peering traffic
        - *default-management* for interfaces carrying system management requests
        - *default-route-announce* for interfaces carrying BGP peer connections

Default property values

If not specified in POST, the following default property values are assigned:

- `scope`
    - *svm* if svm parameter is specified.
    - *cluster* if svm parameter is not specified
- `enabled` - *true*
- `location.auto_revert` - *true*
- `service_policy`
    - ***Unified ONTAP**: *default-data-files* if scope is `svm`
    - ***ASA r2**: *default-data-blocks* if scope is `svm`
        - *default-management* if scope is `cluster` and IPspace is not `Cluster`
        - *default-cluster* if scope is `cluster` and IPspace is `Cluster`
- `failover` - Selects the least restrictive failover policy supported by all the services in the service policy.
- `ddns_enabled`
    - *true* if the interface supports *data_nfs* or *data_cifs* services
    - *false* otherwise

- `fail_if_subnet_conflicts` - *true*

Related ONTAP commands

- `network interface create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
fail_if_subnet_conflicts	boolean	This command fails if the specified IP address falls within the address range of a named subnet. Set this value to false to use the specified IP address and to assign the subnet owning that address to the interface.
ip	ip_info	IP information
ipspace	ipspace	Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

Example request

```
{
  "dns_zone": "storage.company.com",
  "ip": {
    "address": "10.10.10.7",
    "netmask": "24"
  },
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "location": {
    "broadcast_domain": {
      "name": "bd1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "failover": "string",
    "home_node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "is_home": true
  },
  "name": "dataLif1",
  "probe_port": 64001,
  "rdma_protocols": [
    "roce"
  ],
  "scope": "string",
  "service_policy": {
    "name": "default-intercluster",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "services": [
    "data_nfs"
  ],
  "state": "string",
  "subnet": {
```

```
      "name": "subnet1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
recommend	recommend	Response properties specific to the LIF recommendation functionality.
records	array[ip_interface]	

Example response


```
{
  "num_records": 1,
  "recommend": {
    "messages": [
      {}
    ]
  },
  "records": [
    {
      "dns_zone": "storage.company.com",
      "ip": {
        "address": "10.10.10.7",
        "netmask": "24"
      },
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "location": {
        "broadcast_domain": {
          "name": "bd1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "failover": "string",
        "home_node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "home_port": {
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "is_home": true
      },
      "name": "dataLif1",
      "probe_port": 64001,
      "rdma_protocols": [
        "roce"
      ],
      "scope": "string",
      "service_policy": {
```

```
        "name": "default-intercluster",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "services": [
        "data_nfs"
      ],
      "state": "string",
      "subnet": {
        "name": "subnet1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376656	Cluster interfaces must be in the same subnet. Verify the address and netmask are set to the correct values.
1376663	All LIFs from a single DNS zone must be in the same SVM.
1376663	Cannot add interface to DNS zone because all interfaces from a single DNS zone must be in the same SVM.
1376963	Duplicate IP address.
1376976	The specified port is not capable of hosting this LIF.

Error Code	Description
1377583	Failed to create the interface because the broadcast domain of the specified subnet is different from the specified broadcast domain.
1377666	Subnet does not have any addresses available.
1966138	The same IP address may not be used for both a mgmt interface and a gateway address.
1966140	An interface with the same name already exists.
1966141	Invalid DNS zone name.
1966142	Only data LIFs can be assigned a DNS zone.
1966191	The interface could not be created because interface identifier creation failed.
1966217	Invalid port on the node.
1966267	IPv6 addresses must have a prefix length between 1 and 127.
1966269	IPv4 addresses must have a prefix length between 1 and 32.
1966270	Operation not support on SAN LIFs.
1966300	The LIF name is too long. The maximum number of characters allowed for iSCSI and FC LIF names is 254.
1966373	Failed to create interface because the home-port is not in the IPspace associated with the SVM.
1966454	A port on the node is not a member of a broadcast domain.
1966476	DNS Update is supported only on data LIFs.
1966477	DNS Update is supported only on LIFs configured with the NFS or CIFS protocol.
1966987	The Vserver Broadcast-Domain Home-Node and Home-Port combination is not valid.
1967081	The specified SVM must exist in the specified IPspace.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967102	POST operation might have left configuration in an inconsistent state. Check the configuration.
1967106	The specified location.home_port.name does not match the specified port name of location.home_port.uuid.
1967107	The location.home_port.uuid specified is not valid.

Error Code	Description
1967108	The specified location.home_node.name does not match the node name of location.home_node.uuid.
1967109	The specified location.home_port.node.name does not match the node name of location.home_node.uuid.
1967110	The specified location.home_port.node.name does not match location.home_node.name.
1967111	Home node must be specified by at least one location.home_node, location.home_port, or location.broadcast_domain field.
1967112	The specified location.home_node.name does not match the node name of location.home_port.uuid.
1967120	The specified service_policy.name does not match the specified service policy name of service_policy.uuid.
1967121	Invalid service_policy.uuid specified.
1967122	The specified location.broadcast_domain.name does not match the specified broadcast domain name of location.broadcast_domain.uuid.
1967123	The specified IPspace does not match the IPspace name of location.broadcast_domain.uuid.
1967124	The location.broadcast_domain.uuid specified is not valid.
1967127	svm.uuid or svm.name must be provided if scope is "svm".
1967128	ipspace.uuid or ipspace.name must be provided if scope is "cluster".
1967129	The specified location.home_port.uuid is not valid.
1967130	The specified location.home_port.name is not valid.
1967131	The specified location.home_port.uuid and location.home_port.name are not valid.
1967135	The specified location.broadcast_domain.uuid is not valid.
1967136	The specified location.broadcast_domain.name (and ipspace name) is not valid.
1967137	The specified location.broadcast_domain.uuid and location.broadcast_domain.name (and IPspace name) are not valid.
1967145	The specified location.failover is not valid.
1967146	The specified svm.name is not valid.
1967147	The specified svm.uuid is not valid.

Error Code	Description
1967153	No suitable port exists on location.home_node to host the interface.
1967154	Interfaces cannot be created on ports that are down. If a broadcast domain is specified, ensure that it contains at least one port that is operationally up.
1967381	Post VIP interfaces requires an effective cluster version of 9.7 or later.
1967382	VIP interfaces only reside in SVM scope.
1967383	Neither location.home_port.uuid or location.home_port.name should be set with vip=true.
1967384	Failed to create VIP interface because the home node does not have active BGP sessions to support Virtual IP (VIP) traffic.
1967385	VIP interfaces with an IPv4 address must use ip.netmask=32. VIP interfaces with an IPv6 address must use ip.netmask=128.
1967387	The specified IP address is in use by a subnet in this IPspace.
1967391	Setting the DNS zone requires an effective cluster version of 9.9.1 or later.
1967392	Setting the DDNS enable parameter requires an effective cluster version of 9.9.1 or later.
1967394	Setting the probe port parameter requires an effective cluster version of 9.10.1 or later.
1967396	The specified subnet.name does not match the subnet name of subnet.uuid.
1967397	The specified subnet.uuid does not match any configured subnet.";
1967398	Address must be specified by either ip.address and ip.netmask, or at least one subnet field, not both.";
1967401	The specified subnet.name does not match any configured subnet.
1967402	Data SVM cannot be specified with cluster scope.
2621519	Invalid SVM name. The SVM name must begin with a letter or an underscore. The maximum supported length is 41 if the SVM type is "sync-source", otherwise it is 47.
5373966	An iSCSI interface cannot be created in an SVM configured for NVMe.
8847378	Cannot specify DNS zone when DNS updates are enabled for SVM

Error Code	Description
53216540	LIFs on the specified SVM do not have a default service policy.
53281018	Failover policy is not compatible with one or more services in service policy
53281036	Setting the probe port parameter is not allowed on this platform.
53281065	The service_policy does not exist in the SVM.
53281073	IP address and netmask cannot be used because this represents a subnet address rather than a specific host address.
53281086	LIF would exceed the maximum number of supported intercluster LIFs in IPspace.
53281087	Cannot configure SAN LIF on SVM.
53281092	Failed to create interface because the home-port does not support the specified protocol.
53281104	The specified address is in use by the Service Processor
53281106	Failed checking the cluster capabilities.
53281114	The specified parameter is only supported on data SVMs.
53281468	Failed to update external route tables for IP.
53281680	Invalid value for the specified field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
name	string	

Name	Type	Description
uuid	string	

node

Name	Type	Description
name	string	Name of node on which the port is located.

home_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

node

Name	Type	Description
name	string	
uuid	string	

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name.
failover	string	Policy that defines where an interface is permitted to move on failover. The policy named “default” implements the recommended best practice for NAS LIFs on the current platform and cluster, and was known as “system_defined” in the CLI.
home_node	home_node	
home_port	home_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the interface.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

service_policy

Name	Type	Description
name	string	
uuid	string	

throughput_raw

Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_interface

Name	Type	Description
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
fail_if_subnet_conflicts	boolean	This command fails if the specified IP address falls within the address range of a named subnet. Set this value to false to use the specified IP address and to assign the subnet owning that address to the interface.
ip	ip_info	IP information

Name	Type	Description
ipspace	ipspace	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.

Name	Type	Description
vip	boolean	True for a VIP interface, whose location is announced via BGP.

ip_interface_recommend_message

recommend

Response properties specific to the LIF recommendation functionality.

Name	Type	Description
messages	array[ip_interface_recommend_message]	Messages describing the results of a LIF recommendation request.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an IP interface

DELETE `/network/ip/interfaces/{uuid}`

Introduced In: 9.6

Deletes an IP interface.

Related ONTAP commands

- `network interface delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966465	LIF cannot be removed because it is required to maintain quorum on the node.
5376953	The interface is part of one or more portsets. Remove the interface from all portsets before deleting it.
53281112	Failed to delete the interface because it has an associated BGP peer group.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve details for an IP interface

GET `/network/ip/interfaces/{uuid}`

Introduced In: 9.6

Retrieves details for a specific IP interface.

Related ONTAP commands

- `network interface show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	ip_info	IP information
ipspace	ipspace	Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	metric	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	statistics	The real time I/O statistics for the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.

Name	Type	Description
vip	boolean	True for a VIP interface, whose location is announced via BGP.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dns_zone": "storage.company.com",
  "fail_if_subnet_conflicts": true,
  "ip": {
    "address": "10.10.10.7",
    "family": "string",
    "netmask": "24"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "location": {
    "failover": "string",
    "home_node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "dataLif1",
  "probe_port": 64001,
  "rdma_protocols": [
    "roce"
  ],
  "scope": "string",
  "service_policy": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default-intercluster",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "services": [
    "data_nfs"
  ],
  "state": "string",
  "statistics": {
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "subnet": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "subnet1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

Name	Type	Description
name	string	Name of node on which the port is located.

home_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
node	node	
uuid	string	

location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
failover	string	Policy that defines where an interface is permitted to move on failover. The policy named “default” implements the recommended best practice for NAS LIFs on the current platform and cluster, and was known as “system_defined” in the CLI.
home_node	home_node	
home_port	home_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	node	
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the interface.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

service_policy

Name	Type	Description
_links	_links	
name	string	
uuid	string	

throughput_raw

Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
_links	_links	
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the subnet.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an IP interface

PATCH `/network/ip/interfaces/{uuid}`

Introduced In: 9.6

Updates an IP interface.

Related ONTAP commands

- `network interface migrate`
- `network interface modify`
- `network interface rename`
- `network interface revert`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface UUID

Request Body

Name	Type	Description
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
fail_if_subnet_conflicts	boolean	This command fails if the specified IP address falls within the address range of a named subnet. Set this value to false to use the specified IP address and to assign the subnet owning that address to the interface.
ip	ip_info	IP information

Name	Type	Description
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
name	string	Interface name
rdma_protocols	array[string]	Supported RDMA offload protocols
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

Example request

```
{
  "dns_zone": "storage.company.com",
  "ip": {
    "address": "10.10.10.7",
    "netmask": "24"
  },
  "location": {
    "failover": "string",
    "home_node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "dataLif1",
  "rdma_protocols": [
    "roce"
  ],
  "service_policy": {
    "name": "default-intercluster",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "services": [
    "data_nfs"
  ],
  "state": "string",
  "subnet": {
```

```
      "name": "subnet1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
    "vip": true
  }
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	Field cannot be set in this operation.
1376663	Cannot add interface to DNS zone because all interfaces from a single DNS zone must be in the same SVM.
1376963	Duplicate IP address.
1376976	The specified port is not capable of hosting this LIF.
1376986	The interface could not migrate because no additional interfaces can be hosted on the specified node.
1376997	Interface failed to migrate because the node hosting the port is not healthy.
1376998	The specified location.node does not own any ports in the same broadcast domain as the home port of the interface.
1376999	Interface failed to migrate because port is in the down admin state.
1377607	The specified location.port is not in the same broadcast domain as the home port of the interface.
1377666	Subnet does not have any addresses available.
1966081	Failed to lookup the port on the node.
1966133	The netmask cannot represent the entire IP subnet.
1966135	Cluster configuration can only be changed from node where the cluster LIF resides.

Error Code	Description
1966138	The same IP address may not be used for both a mgmt interface and a gateway address.
1966141	Invalid DNS zone name.
1966142	Only data LIFs can be assigned a DNS zone.
1966191	The interface could not be created because interface identifier creation failed.
1966197	Migration of cluster interfaces must be done from the local node.
1966238	Cannot change the home-node or home-port of an active SAN or NVMe data interface.
1966267	IPv6 addresses must have a prefix length between 1 and 127.
1966269	IPv4 addresses must have a prefix length between 1 and 32.
1966299	Changing a cluster LIF's administrative status to down is not a supported operation.
1966419	Subnet not found in the IPspace of the SVM.
1966419	Specified subnet not found in the IPspace of the LIF.
1966476	DNS Update is supported only on data interfaces.
1966477	DNS Update is supported only on interfaces configured with the NFS or CIFS protocol.
1966507	A port on the node has been identified as potentially unhealthy.
1966685	There are no ports on the node that are in the broadcast domain associated with the IPspace.
1967106	The specified location.home_port.name does not match the specified port name of location.home_port.uuid.
1967107	The specified location.home_port.uuid is not valid.
1967111	A home node must be specified by at least one location.home_node, location.home_port, or location.broadcast_domain field.
1967113	The specified location.port.name does not match the port name of location.port.uuid.
1967114	The specified location.port.uuid is not valid.
1967115	The specified location.node.name does not match the node name of location.node.uuid.
1967116	The specified location.port.node.name does not match the node name of location.node.uuid.

Error Code	Description
1967117	The specified location.port.node.name does not match location.node.name.
1967118	A node must be specified by at least one location.node or location.port field.
1967119	The specified location.node.name does not match the node name of location.port.uuid.
1967120	The specified service_policy.name does not match the specified service policy name of service_policy.uuid.
1967121	The specified service_policy.uuid is not valid.
1967125	You cannot patch the "location.node" or "location.port" fields to migrate interfaces using the iSCSI data protocol. Instead perform the following PATCH operations on the interface: set the "enabled" field to "false"; change one or more "location.home_port" fields to migrate the interface; and then set the "enabled" field to "true".
1967129	The specified location.home_port.uuid is not valid.
1967130	The specified location.home_port.name is not valid.
1967131	The specified location.home_port.uuid and location.home_port.name are not valid.
1967132	The specified location.port.uuid is not valid.
1967133	The specified location.port.name is not valid.
1967134	The specified location.port.uuid and location.port.name are not valid.
1967138	Cannot patch port for a VIP interface. The specified parameter location.port.uuid is not valid.
1967139	Cannot patch port for a VIP interface. The specified parameter location.port.name is not valid.
1967140	Cannot patch port for a VIP interface. The specified parameters location.port.uuid and location.port.name are not valid.
1967141	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.uuid is not valid.
1967142	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.name is not valid.
1967143	Cannot patch home_port for a VIP interface. The specified parameters location.home_port.uuid and location.home_port.name are not valid.
1967145	The specified location.failover is not valid.

Error Code	Description
1967153	No suitable port exists on location.home_node to host the interface.
1967380	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.node.name is not valid. Consider using location.home_node.name instead.
1967385	VIP interface address and netmask error.
1967386	Cannot patch port for a VIP interface. The specified parameter location.port.node.name is not valid. Consider using location.node.name instead.
1967387	The specified IP address is in use by a subnet in this IPspace.
1967389	Patching location.is_home to the value "false" is not supported. The value "true" would revert a network interface to its home port if the current value is "false".
1967390	Cannot patch a LIF revert as it requires an effective cluster version of 9.9.1 or later.
1967391	Patching the DNS zone requires an effective cluster version of 9.9.1 or later.
1967392	Patching the DDNS enable parameter requires an effective cluster version of 9.9.1 or later.
1967396	The specified subnet.name does not match the subnet name of subnet.uuid.
1967397	The specified subnet.uuid does not match any configured subnet.";
1967398	Address must be specified by either ip.address and ip.netmask, or at least one subnet field, not both.";
2621574	This operation is not permitted on an SVM that is configured as the destination of a MetroCluster SVM relationship.
53281018	Failover policy is not compatible with one or more services in service policy
53281065	The service_policy does not exist in the SVM.
53281072	The failover policy is not valid for interfaces in the SVM.
53281086	LIF would exceed the maximum number of supported intercluster LIFs in IPspace.
53281087	SVM must have an NVMe service to perform this operation.
53281089	LIF on SVM cannot be updated to use service policy because that service policy includes SAN services and the target LIF is not home.

Error Code	Description
53281096	LIF could not be modified because the current port does not support the specified rdma-protocols.
53281106	Failed checking the cluster capabilities.
53281109	The interface could not be updated to use the service policy because the interface is currently associated with BGP peer group.
53281111	Cannot update the service policy because the interface is associated with a BGP peer-group.
53281113	Configuration details for LIF were modified but an error was encountered while updating the LIF's operational status.
53281114	The specified parameter is only supported on data SVMs.
53281468	Failed to update external route tables for IP.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
name	string	

Name	Type	Description
uuid	string	

node

Name	Type	Description
name	string	Name of node on which the port is located.

home_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

node

Name	Type	Description
name	string	
uuid	string	

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

Name	Type	Description
name	string	
node	node	
uuid	string	

location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	

Name	Type	Description
failover	string	Policy that defines where an interface is permitted to move on failover. The policy named “default” implements the recommended best practice for NAS LIFs on the current platform and cluster, and was known as “system_defined” in the CLI.
home_node	home_node	
home_port	home_port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	node	
port	port	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the interface.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.

service_policy

Name	Type	Description
name	string	
uuid	string	

throughput_raw

Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_interface

Name	Type	Description
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.

Name	Type	Description
fail_if_subnet_conflicts	boolean	This command fails if the specified IP address falls within the address range of a named subnet. Set this value to false to use the specified IP address and to assign the subnet owning that address to the interface.
ip	ip_info	IP information
location	location	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
name	string	Interface name
rdma_protocols	array[string]	Supported RDMA offload protocols
service_policy	service_policy	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve interface historical performance metrics

GET `/network/ip/interfaces/{uuid}/metrics`

Introduced In: 9.8

Retrieves historical performance metrics for an interface.

Parameters

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
timestamp	string	query	False	Filter by timestamp
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
status	string	query	False	Filter by status
uuid	string	path	True	Unique identifier of the interface.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Throughput performance for the interfaces.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the interface.
timestamp	string	The timestamp of the performance data.
uuid	string	The UUID that uniquely identifies the interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network IP routes

Network IP routes endpoint overview

Overview

This endpoint supports the following operations: GET (collection and instance), POST, and DELETE.

Retrieving network routes

You can use the IP routes GET API to retrieve and display relevant information pertaining to the routes configured in the cluster. The API retrieves the list of all routes configured in the cluster, or a specific route. The fields that are returned in the response will differ with the configuration.

Examples

Retrieving all routes in the cluster

The following output shows the list of all routes configured in a cluster.

```
# The API:
/api/network/ip/routes

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/routes?fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "5fdffb0b-62f8-11e8-853d-005056b4c971",
    "ipspace": {
      "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
      "name": "Default",
```

```
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-
005056b4c971"
        }
      }
    },
    "svm": {
      "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
        }
      }
    },
    "scope": "svm",
    "destination": {
      "address": "10.4.3.14",
      "netmask": "18",
      "family": "ipv4"
    },
    "gateway": "10.4.3.1",
    "_links": {
      "self": {
        "href": "/api/network/ip/routes/5fdffb0b-62f8-11e8-853d-
005056b4c971"
      }
    }
  },
  {
    "uuid": "84c128d2-62f9-11e8-853d-005056b4c971",
    "ipspace": {
      "uuid": "cc71aadc-62f7-11e8-853d-005056b4c971",
      "name": "ips1",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/cc71aadc-62f7-11e8-853d-
005056b4c971"
        }
      }
    },
    "scope": "cluster",
    "destination": {
      "address": "::",
      "netmask": "0",
```

```
      "family": "ipv6"
    },
    "gateway": "fd20:8b1e:b255:814e::1",
    "_links": {
      "self": {
        "href": "/api/network/ip/routes/84c128d2-62f9-11e8-853d-
005056b4c971"
      }
    }
  },
  {
    "uuid": "8cc72bcd-616c-11e8-a4df-005056b4c971",
    "ipspace": {
      "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-
005056b4c971"
        }
      }
    },
    "scope": "cluster",
    "destination": {
      "address": "0.0.0.0",
      "netmask": "0",
      "family": "ipv4"
    },
    "gateway": "10.224.64.1",
    "_links": {
      "self": {
        "href": "/api/network/ip/routes/8cc72bcd-616c-11e8-a4df-
005056b4c971"
      }
    }
  },
  {
    "uuid": "d63b6eee-62f9-11e8-853d-005056b4c971",
    "ipspace": {
      "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-
005056b4c971"
        }
```

```
      }
    },
    "svm": {
      "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
        }
      }
    },
    "scope": "svm",
    "destination": {
      "address": "fd20:8b1e:b255:814e::",
      "netmask": "64",
      "family": "ipv6"
    },
    "gateway": "fd20:8b1e:b255:814e::1",
    "_links": {
      "self": {
        "href": "/api/network/ip/routes/d63b6eee-62f9-11e8-853d-
005056b4c971"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/network/ip/routes?fields=*"
  }
}
}
```


Retrieving a specific Cluster-scoped route

The following output shows the returned response when a specific Cluster-scoped route is requested. The system returns an error if there is no route with the requested UUID. SVM information is not returned for Cluster-scoped routes.

```
# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/routes/84c128d2-62f9-11e8-
853d-005056b4c971?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "84c128d2-62f9-11e8-853d-005056b4c971",
"ipspace": {
  "uuid": "cc71aadc-62f7-11e8-853d-005056b4c971",
  "name": "ips1",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/cc71aadc-62f7-11e8-853d-005056b4c971"
    }
  }
},
"scope": "cluster",
"destination": {
  "address": "::",
  "netmask": "0",
  "family": "ipv6"
},
"gateway": "fd20:8b1e:b255:814e::1",
"_links": {
  "self": {
    "href": "/api/network/ip/routes/84c128d2-62f9-11e8-853d-005056b4c971"
  }
}
}
```

Retrieving a specific SVM-scoped route

The following output shows the returned response when a specific SVM-scoped route is requested. The system returns an error if there is no route with the requested UUID. The SVM object is only included for SVM-scoped routes.

```
# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/routes/d63b6eee-62f9-11e8-
853d-005056b4c971?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "d63b6eee-62f9-11e8-853d-005056b4c971",
"ipspace": {
  "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-005056b4c971"
    }
  }
},
"svm": {
  "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
    }
  }
},
"scope": "svm",
"destination": {
  "address": "fd20:8b1e:b255:814e::",
  "netmask": "64",
  "family": "ipv6"
},
"gateway": "fd20:8b1e:b255:814e::1",
"_links": {
  "self": {
    "href": "/api/network/ip/routes/d63b6eee-62f9-11e8-853d-005056b4c971"
  }
}
}
```

Creating network routes

You can use the POST API to create an SVM-scoped route by specifying the associated SVM, or a Cluster-scoped route by specifying the associated IPspace.

Examples

Creating a Cluster-scoped route

IPspace is required to create a Cluster-scoped route. If the IPspace is not specified, the route will be created in the Default IPspace. The default destination will be set to "0.0.0.0/0" for IPv4 gateway addresses or "::/0" for IPv6 gateway addresses.

```
# The API:
/api/network/ip/routes

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/routes?return_records=true"
-H "accept: application/json" -d '{ "ipspace": { "name":"ips1" },
"gateway": "10.10.10.1"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "ae583c9e-9ac7-11e8-8bc9-005056bbd531",
    "ipspace": {
      "name": "ips1"
    },
    "gateway": "10.10.10.1"
  }
]
}
```

Creating an SVM-scoped route

To create an SVM-scoped route, the associated SVM can be identified by either its UUID or name.

```
# The API:
/api/network/ip/routes

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/routes?return_records=true"
-H "accept: application/json" -d '{ "svm": { "name":"vs0" }, "gateway":
"10.10.10.1"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "38805a91-9ac9-11e8-8bc9-005056bbd531",
    "svm": {
      "name": "vs0"
    },
    "gateway": "10.10.10.1"
  }
]
}
```

Deleting network routes

You can use the DELETE API to delete a specific route identified by its UUID.

Example

Deleting a specific route

```
# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/routes/38805a91-9ac9-
11e8-8bc9-005056bbd531"
```

Retrieve IP routes

GET `/network/ip/routes`

Introduced In: 9.6

Retrieves the collection of IP routes.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `interfaces.*`

Related ONTAP commands

- `network route show`
- `network route show-lifs`

Parameters

Name	Type	In	Required	Description
metric	integer	query	False	Filter by metric • Introduced in: 9.11
scope	string	query	False	Filter by scope
gateway	string	query	False	Filter by gateway
uuid	string	query	False	Filter by uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
destination.family	string	query	False	Filter by destination.family
destination.netmask	string	query	False	Filter by destination.netmask
destination.address	string	query	False	Filter by destination.address

Name	Type	In	Required	Description
interfaces.name	string	query	False	Filter by interfaces.name • Introduced in: 9.9
interfaces.ip.address	string	query	False	Filter by interfaces.ip.address • Introduced in: 9.9
interfaces.uuid	string	query	False	Filter by interfaces.uuid • Introduced in: 9.9
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[network_route]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "destination": {
        "address": "10.10.10.7",
        "family": "string",
        "netmask": "24"
      },
      "gateway": "10.1.1.1",
      "interfaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "ip": {
            "address": "10.10.10.7"
          },
          "name": "lif1",
```

```
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "ipspace": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "Default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "scope": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

network_route

Name	Type	Description
_links	_links	
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[interfaces]	IP interfaces on the same subnet as the gateway.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
metric	integer	Indicates a preference order between several routes to the same destination. With typical usage, the default metrics provided are adequate, there is no need to specify a metric in the route creation.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied.
uuid	string	The UUID that uniquely identifies the route.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a cluster-scoped or SVM-scoped static route

POST `/network/ip/routes`

Introduced In: 9.6

Creates a Cluster-scoped or SVM-scoped static route.

Required properties

- `gateway` - IP address to route packets to.
- SVM-scoped routes
  - `svm.name` or `svm.uuid` - SVM that route is applied to.
- cluster-scoped routes
  - There are no additional required fields for Cluster-scoped routes.

Default property values

If not specified in POST, the following default property values are assigned:

- `destination` - *0.0.0.0/0* for IPv4 or *::/0* for IPv6.
- `ipspace.name`
  - *Default* for Cluster-scoped routes.
  - Name of the SVM's IPspace for SVM-scoped routes.
- `metric` - 20.

Related ONTAP commands

- `network route create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[interfaces]	IP interfaces on the same subnet as the gateway.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
metric	integer	Indicates a preference order between several routes to the same destination. With typical usage, the default metrics provided are adequate, there is no need to specify a metric in the route creation.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied.
uuid	string	The UUID that uniquely identifies the route.

Example request

```
{
  "destination": {
    "address": "10.10.10.7",
    "netmask": "24"
  },
  "gateway": "10.1.1.1",
  "interfaces": [
    {
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[network_route]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "destination": {
        "address": "10.10.10.7",
        "netmask": "24"
      },
      "gateway": "10.1.1.1",
      "interfaces": [
        {
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966265	The destination and gateway must belong to the same IP address family.
1966345	Duplicate route exists.
1966505	The gateway address cannot be the same as a LIF address. A LIF is already configured with that IP address.
1967080	The destination.address is missing.
1967081	The specified SVM must exist in the specified IPspace.
1967082	The specified ipspace.uuid and ipspace.name refer to different IPspaces.
1967146	The specified svm.name is not valid.
2621462	The specified SVM does not exist.
2621574	This operation is not permitted on an SVM that is configured as the destination of a MetroCluster SVM relationship.
2621706	The specified UUID and name refer to different SVMs.
53282375	The specified destination is invalid.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip

IP information

interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

network_route

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[interfaces]	IP interfaces on the same subnet as the gateway.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
metric	integer	Indicates a preference order between several routes to the same destination. With typical usage, the default metrics provided are adequate, there is no need to specify a metric in the route creation.
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the route.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an IP route

DELETE `/network/ip/routes/{uuid}`

Introduced In: 9.6

Deletes a specific IP route.

Related ONTAP commands

- `network route delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Route UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve details for an IP route

GET `/network/ip/routes/{uuid}`

Introduced In: 9.6

Retrieves the details of a specific IP route.

Related ONTAP commands

- `network route show`
- `network route show-lifs`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Route UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[interfaces]	IP interfaces on the same subnet as the gateway.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
metric	integer	Indicates a preference order between several routes to the same destination. With typical usage, the default metrics provided are adequate, there is no need to specify a metric in the route creation.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	Applies only to SVM-scoped objects. Either the UUID or name must be supplied.
uuid	string	The UUID that uniquely identifies the route.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "destination": {
    "address": "10.10.10.7",
    "family": "string",
    "netmask": "24"
  },
  "gateway": "10.1.1.1",
  "interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interfaces

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information

Name	Type	Description
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network IP service policies

Network IP service-policies endpoint overview

Overview

Service policies are named groupings that define what services are supported by an IP interface.
The following operations are supported:

- Creation: POST network/ip/service-policies
- Collection Get: GET network/ip/service-policies
- Instance Get: GET network/ip/service-policies/{uuid}
- Instance Patch: PATCH network/ip/service-policies/{uuid}
- Instance Delete: DELETE network/ip/service-polices/{uuid}

Examples

Retrieving all service policies in the cluster

The following output shows the collection of all service policies configured in a 2-node cluster. By default (without 'field=*' parameter), only the UUID and name fields are shown for each entry.

```
# The API:
/api/network/ethernet/ip/service-policies

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
```

```
    "uuid": "e4e2f193-c1a3-11e8-bb9d-005056bb88c8",
    "name": "net-intercluster",
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/e4e2f193-c1a3-11e8-bb9d-
005056bb88c8"
      }
    }
  },
  {
    "uuid": "e4e3f6da-c1a3-11e8-bb9d-005056bb88c8",
    "name": "net-route-announce",
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/e4e3f6da-c1a3-11e8-bb9d-
005056bb88c8"
      }
    }
  },
  {
    "uuid": "e5111111-c1a3-11e8-bb9d-005056bb88c8",
    "name": "vserver-route-announce",
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/e5111111-c1a3-11e8-bb9d-
005056bb88c8"
      }
    }
  },
  {
    "uuid": "e6111111-c1a3-11e8-bb9d-005056bb88c8",
    "name": "data-route-announce",
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/e6111111-c1a3-11e8-bb9d-
005056bb88c8"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/network/ip/service-
policies/?return_records=true&return_timeout=15"
  }
```

```
  }
}
```

Retrieving a specific service policy (scope=svm)

The following output displays the response when a specific "svm" scoped service policy is requested. Among other parameters, the response contains the svm parameters associated with the service policy. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "http://<mgmt-ip>/api/network/ip/service-policies/dad323ff-
4ce0-11e9-9372-005056bb91a8?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "dad323ff-4ce0-11e9-9372-005056bb91a8",
"name": "default-data-files",
"scope": "svm",
"svm": {
  "uuid": "d9060680-4ce0-11e9-9372-005056bb91a8",
  "name": "vs0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/d9060680-4ce0-11e9-9372-005056bb91a8"
    }
  }
},
"ipspace": {
  "uuid": "45ec2dee-4ce0-11e9-9372-005056bb91a8",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/45ec2dee-4ce0-11e9-9372-005056bb91a8"
    }
  }
},
"is_built_in": true,
"services": [
  "data_core",
  "data_nfs",
  "data_cifs",
  "data_flexcache"
],
"_links": {
  "self": {
    "href": "/api/network/ip/service-policies/dad323ff-4ce0-11e9-9372-
005056bb91a8"
  }
}
}
```

Retrieving a specific service policy (scope=svm) when requesting commonly used fields

The following output displays the response when commonly used fields are requested for a specific "svm" scoped service policy. Among other parameters, the response contains the svm parameters associated with the service policy. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/e0889ce6-
1e6a-11e9-89d6-005056bbdc04?fields=name,scope,svm.name,ipspace.name" -H
"accept: application/hal+json"

# The response:
{
"uuid": "e0889ce6-1e6a-11e9-89d6-005056bbdc04",
"name": "test_policy",
"scope": "svm",
"svm": {
  "name": "vs0"
},
"ipspace": {
  "name": "Default"
},
"_links": {
  "self": {
    "href": "/api/network/ip/service-policies/e0889ce6-1e6a-11e9-89d6-
005056bbdc04"
  }
}
}
```

Retrieving a specific service policy (scope=cluster)

The following output displays the response when a specific cluster-scoped service policy is requested. The SVM object is not included for cluster-scoped service policies. A service policy with a scope of "cluster" is associated with an IPspace. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/4c6b72b9-
0f6c-11e9-875d-005056bb21b8?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "4c6b72b9-0f6c-11e9-875d-005056bb21b8",
"name": "net-intercluster",
"scope": "cluster",
"ipspace": {
  "uuid": "4051f13e-0f6c-11e9-875d-005056bb21b8",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/4051f13e-0f6c-11e9-875d-005056bb21b8"
    }
  }
},
"is_built_in": false,
"services": [
  "intercluster_core"
],
"_links": {
  "self": {
    "href": "/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-
005056bb21b8"
  }
}
}
```

Retrieving a specific service policy (scope=cluster) when requesting commonly used fields

The following output displays the response when commonly used fields are requested for a specific "cluster" scoped service policy. The SVM object is not included for cluster-scoped service policies. A service policy with a scope of "cluster" is associated with an IPspace. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/4c6b72b9-
0f6c-11e9-875d-005056bb21b8?fields=name,scope,ipspace.name" -H "accept:
application/hal+json"

# The response:
{
"uuid": "4c6b72b9-0f6c-11e9-875d-005056bb21b8",
"name": "net-intercluster",
"scope": "cluster",
"ipspace": {
  "name": "Default"
},
"services": [
  "intercluster_core"
],
"_links": {
  "self": {
    "href": "/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-
005056bb21b8"
  }
}
}
```

Creating service policies

You can use this API to create an SVM-scoped service policy by specifying the associated SVM, or a cluster-scoped service policy by specifying the associated IPspace. If the scope is not specified, it is inferred from the presence of the IPspace or SVM.
Cluster scoped service policies will operate on the IPspace "Default" unless IPspace is explicitly specified.

Examples

Creating a cluster-scoped service policy

The following output displays the response when creating a service policy with a scope of "cluster" and an IPspace of "Default".

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "cluster", "ipspace": { "name":"Default" },
"services": [ "intercluster_core" ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "74139267-f1aa-11e9-b5d7-005056a73e2e",
    "name": "new-policy",
    "scope": "cluster",
    "ipspace": {
      "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/ba556295-e912-11e9-a1c8-
005056a7080e"
        }
      }
    },
    "is_built_in": false,
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
      }
    },
    "services": [
      "intercluster_core"
    ]
  }
]
}
```

Creating a cluster-scoped service policy without specifying IPspace

The following output displays the response when creating a service policy with a scope of "cluster" without specifying an IPspace".

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "cluster", "services": [ "intercluster_core" ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "74139267-f1aa-11e9-b5d7-005056a73e2e",
    "name": "new-policy",
    "scope": "cluster",
    "ipspace": {
      "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/ba556295-e912-11e9-a1c8-
005056a7080e"
        }
      }
    },
    "is_built_in": false,
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
      }
    },
    "services": [
      "intercluster_core"
    ]
  }
]
}
```

Creating a cluster-scoped service policy without specifying scope

The following output displays the response when creating a service policy in the "Default" IPspace without specifying the scope".

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy2", "ipspace.name": "Default", "services": [
"intercluster_core" ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "59439267-f1aa-11e9-b5d7-005056a73e2e",
    "name": "new-policy2",
    "scope": "cluster",
    "ipspace": {
      "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/ba556295-e912-11e9-a1c8-
005056a7080e"
        }
      }
    },
    "is_built_in": false,
    "services": [
      "intercluster_core"
    ],
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
      }
    }
  }
]
}
```

Creating an SVM-scoped service policy

The following output displays the response when creating a service policy with a scope of "svm" in the SVM "vs0".

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "svm", "svm": { "name":"vs0" }, "services": [
"data-nfs", "data-cifs" ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "f3901097-f2c4-11e9-b5d7-005056a73e2e",
    "name": "new-policy",
    "scope": "svm",
    "svm": {
      "uuid": "07df9cee-e912-11e9-a13a-005056a73e2e",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/07df9cee-e912-11e9-a13a-005056a73e2e"
        }
      }
    },
    "ipspace": {
      "uuid": "1d3199d2-e906-11e9-a13a-005056a73e2e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/1d3199d2-e906-11e9-a13a-
005056a73e2e"
        }
      }
    },
    "is_built_in": false,
    "services": [
      "data_nfs",
      "data_cifs"
```

```
    ],
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/f3901097-f2c4-11e9-b5d7-
005056a73e2e"
      }
    }
  }
]
}
```

Creating an SVM-scoped service policy without specifying scope

The following output displays the response when creating a service policy with a SVM of "vs0" without specifying the scope.

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "svm": { "name":"vs0" }, "services": [ "data-nfs", "data-
cifs" ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "f3901097-f2c4-11e9-b5d7-005056a73e2e",
    "name": "new-policy",
    "scope": "svm",
    "svm": {
      "uuid": "07df9cee-e912-11e9-a13a-005056a73e2e",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/07df9cee-e912-11e9-a13a-005056a73e2e"
        }
      }
    },
    "ipspace": {
```

```
      "uuid": "1d3199d2-e906-11e9-a13a-005056a73e2e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/1d3199d2-e906-11e9-a13a-
005056a73e2e"
        }
      }
    },
    "is_built_in": false,
    "services": [
      "data_nfs",
      "data_cifs"
    ],
    "_links": {
      "self": {
        "href": "/api/network/ip/service-policies/f3901097-f2c4-11e9-b5d7-
005056a73e2e"
      }
    }
  }
]
}
```


Updating the name of a service policy

The following example displays the command used to update the name of a service policy scoped to a specific "svm". The system returns an error when there is no
service policy associated with the UUID or the service policy cannot be renamed.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/service-policies/734eaf57-
d2fe-11e9-9284-005056acaad4" -d "{ \"name\": \"new-name\" }" -H "accept:
application/hal+json"
```

Updating the services for a service policy

The following example displays the command used to update the services a service policy contains.

The specified services replace the existing services. To retain existing services, they must be included in the PATCH request.
The system returns an error when there is no
service policy associated with the UUID or the services cannot be applied.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/service-policies/734eaf57-
d2fe-11e9-9284-005056acaad4" -d "{ \"services\": [ \"data-nfs\",\"data-
cifs\" ] }" -H "accept: application/hal+json"
```

Deleting a service policy

The following output displays the response for deleting a service policy.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X  DELETE "https://<mgmt-ip>/api/network/ip/service-
policies/757ed726-bdc1-11e9-8a92-005056a7bf25" -H "accept:
application/hal+json"
```

Retrieve service policies

GET `/network/ip/service-policies`

Introduced In: 9.6

Retrieves a collection of service policies.

Related ONTAP commands

- `network interface service-policy show`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
uuid	string	query	False	Filter by uuid
scope	string	query	False	Filter by scope
services	string	query	False	Filter by services
name	string	query	False	Filter by name
is_built_in	boolean	query	False	Filter by is_built_in • Introduced in: 9.11
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[ip_service_policy]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "default-intercluster",
      "scope": "string",
      "services": [
        "data_nfs"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_service_policy

Name	Type	Description
_links	_links	

Name	Type	Description
ipspace	ipspace	
is_built_in	boolean	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a service policy for network interfaces

POST `/network/ip/service-policies`

Introduced In: 9.8

Creates a service policy for network interfaces.

Related ONTAP commands

- `network interface service-policy create`

Required properties

- `name` - Name of the service policy to create.
- `ipspace.name` or `ipspace.uuid`
  - Required for cluster-scoped service policies.
  - Optional for SVM-scoped service policies.
- `svm.name` or `svm.uuid`
  - Required for SVM-scoped service policies.
  - Not valid for cluster-scoped service policies.

Default property values

If not specified in POST, the following default property values are assigned:

- `scope`
  - svm if the svm parameter is specified
  - cluster if the svm parameter is not specified

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
ipspace	ipspace	
is_built_in	boolean	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "default-intercluster",
  "scope": "string",
  "services": [
    "data_nfs"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966373	Port must reside in the same IPspace as the interface's SVM.
1967146	Svm.name does not exist.
1967147	Svm.uuid does not exist.
2621740	An unexpected error when trying to determine whether the target Vserver was locked or not on this cluster.
53281895	Custom service policies cannot be created on the specified svm
53281929	Service policies cannot combine block and file services.
53281931	Service policy names cannot start with "default-".
53281932	Service cannot be added because the service does not exist for the specified SVM or IPspace.
53281933	A Cluster-scoped service cannot be added to a SVM-scoped service policy.
53281934	An SVM-scoped service cannot be added to a Cluster-scoped service policy.
53281935	Scope is set to "svm" and svm.uuid or svm.name have not been specified.
53281936	The SVM is not in the specified IPspace.
53281937	Svm.uuid and svm.name are not valid parameters when scope is cluster.
53281938	Svm.uuid or svm.name specify a vserver that does not exist.
53281939	One or more of the svm.uuid, svm.name, ipspace.uuid, and ipspace.name have invalid values.
53281940	SVM or IPspace has not been specified.
53281941	SVM does not exist.
53281942	Service policy cannot be created because the specified SVM does not exist.
53281944	Ipspace.name does not exist.
53281945	Ipspace.uuid is not an IPspace.
53281946	Service policy already exists.
53281958	Service policies cannot contain multiple block-oriented services.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_service_policy

Name	Type	Description
ipspace	ipspace	
is_built_in	boolean	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a service policy for network interfaces

DELETE `/network/ip/service-policies/{uuid}`

Introduced In: 9.8

Deletes a service policy for network interfaces.

Related ONTAP commands

- `network interface service-policy delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the service policy

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621740	An unexpected error when trying to determine whether the target Vserver was locked or not on this cluster.
53281927	Service policies owned by the system cannot be deleted.
53281928	Service policies assigned to LIFs cannot be deleted.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a service policy

GET `/network/ip/service-policies/{uuid}`

Introduced In: 9.6

Retrieves a specific service policy.

Related ONTAP commands

- `network interface service-policy show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Service policy UUID
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ipspace	ipspace	
is_built_in	boolean	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "default-intercluster",
  "scope": "string",
  "services": [
    "data_nfs"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a service policy for network interfaces

PATCH `/network/ip/service-policies/{uuid}`

Introduced In: 9.8

Updates a service policy for network interfaces.

Related ONTAP commands

- `network interface service-policy add-service`
- `network interface service-policy modify-service`
- `network interface service-policy remove-service`
- `network interface service-policy rename`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the service policy

Request Body

Name	Type	Description
is_built_in	boolean	
name	string	
services	array[string]	
uuid	string	

Example request

```
{
  "name": "default-intercluster",
  "services": [
    "data_nfs"
  ],
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1376669	Port must reside in the same IPspace as the interface's SVM.
2621740	An unexpected error when trying to determine whether the target Vserver was locked or not on this cluster.
53281911	Modifying the service policy is disallowed because policies on this SVM are managed by the system
53281929	Service policies cannot combine block and file services.
53281930	Service policies maintained by the system cannot be renamed.
53281931	Service policy names cannot start with "default-".
53281932	Service cannot be added because the service does not exist for the specified SVM or IPspace.
53281933	A Cluster-scoped service cannot be added to a SVM-scoped service policy.
53281934	An SVM-scoped service cannot be added to a Cluster-scoped service policy.

Error Code	Description
53281952	The service policy on an SVM cannot be updated to include a block service. Use built-in service policies for SAN services.
53281953	The service policy on an SVM cannot be updated to include a new service.
53281960	Service cannot be removed from the service policy because it is used by one or more interfaces.
53281961	Service cannot be removed from the service policy because it is used by one or more interfaces.
53281963	Service cannot be removed from the service policy because it is used by one or more interfaces.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ip_service_policy

Name	Type	Description
is_built_in	boolean	
name	string	
services	array[string]	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network IP subnets

Network IP subnets endpoint overview

Overview

The following operations are supported:

- Creation: POST network/ip/subnets
- Collection Get: GET network/ip/subnets
- Instance Get: GET network/ip/subnets/{uuid}
- Instance Patch: PATCH network/ip/subnets/{uuid}
- Instance Delete: DELETE network/ip/subnets/{uuid}

Retrieving IP subnet information

The IP subnets GET API retrieves and displays relevant information pertaining to the subnets configured in the cluster. The response can contain a list of multiple subnets or a specific subnet.

Examples

Retrieving all subnets in the cluster

The following example shows the list of all subnets configured in a cluster.

```
# The API:
/api/network/ip/subnets

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "451d8d99-582c-11ec-8572-005056acd597",
    "name": "Subnet-002",
    "_links": {
      "self": {
        "href": "/api/network/ip/subnets/451d8d99-582c-11ec-8572-
005056acd597"
      }
    }
  },
  {
    "uuid": "615b722f-5795-11ec-8572-005056acd597",
    "name": "Subnet-001",
    "_links": {
      "self": {
        "href": "/api/network/ip/subnets/615b722f-5795-11ec-8572-
005056acd597"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/ip/subnets"
  }
}
}
```

Retrieving a specific subnet

The following example shows the response when a specific subnet is requested. This is equivalent to fields=*, which returns most of the fields. The system returns an error when there is no subnet with the requested UUID.

```
# The API:
/api/network/ip/subnets/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets/451d8d99-582c-11ec-
8572-005056acd597" -H "accept: application/hal+json"

# The response:
{
"uuid": "451d8d99-582c-11ec-8572-005056acd597",
"name": "Subnet-002",
"ipspace": {
  "uuid": "6f62c691-5780-11ec-8572-005056acd597",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/6f62c691-5780-11ec-8572-005056acd597"
    }
  }
},
"broadcast_domain": {
  "uuid": "9a1dce3b-5780-11ec-8572-005056acd597",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/9a1dce3b-5780-11ec-
8572-005056acd597"
    }
  }
},
"subnet": {
  "address": "10.2.1.0",
  "netmask": "24",
  "family": "ipv4"
},
"gateway": "10.2.1.1",
"_links": {
  "self": {
    "href": "/api/network/ip/subnets/451d8d99-582c-11ec-8572-005056acd597"
  }
}
}
```

Retrieving all the fields for a specific subnet

The following example shows the response when all the fields for a specific subnet are requested, returning everything that fields=* returns plus the IP ranges and count fields. The system returns an error when there is no subnet with the requested UUID.

```
# The API:
/api/network/ip/subnets/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets/451d8d99-582c-11ec-
8572-005056acd597?fields=**" -H "accept: application/hal+json"

# The response:
{
"uuid": "451d8d99-582c-11ec-8572-005056acd597",
"name": "Subnet-002",
"ipspace": {
  "uuid": "6f62c691-5780-11ec-8572-005056acd597",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/6f62c691-5780-11ec-8572-005056acd597"
    }
  }
},
"broadcast_domain": {
  "uuid": "9a1dce3b-5780-11ec-8572-005056acd597",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/9a1dce3b-5780-11ec-
8572-005056acd597"
    }
  }
},
"subnet": {
  "address": "10.2.1.0",
  "netmask": "24",
  "family": "ipv4"
},
"gateway": "10.2.1.1",
"ip_ranges": [
  {
    "start": "10.2.1.10",
```

```
    "end": "10.2.1.22",
    "family": "ipv4"
  },
  {
    "start": "10.2.1.101",
    "end": "10.2.1.200",
    "family": "ipv4"
  }
],
"available_ip_ranges": [
  {
    "start": "10.2.1.10",
    "end": "10.2.1.22",
    "family": "ipv4"
  },
  {
    "start": "10.2.1.101",
    "end": "10.2.1.200",
    "family": "ipv4"
  }
],
"total_count": 113,
"used_count": 0,
"available_count": 113,
"_links": {
  "self": {
    "href": "/api/network/ip/subnets/451d8d99-582c-11ec-8572-
005056acd597?fields=**"
  }
}
}
```


Creating IP subnets

You can use the IP subnets POST API to create IP subnets as shown in the following examples.

Examples

Creating an IP subnet using the minimum number of parameters.

The following example shows the record returned after the creation of an IP subnet.

```
# The API:
/api/network/ip/subnets

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/subnets" -H "accept:
application/hal+json" -d '{ "name": "Subnet-003", "broadcast_domain": {
"uuid": "6577524b-5863-11ec-8981-005056a7077f" }, "subnet": { "address":
"10.3.0.0", "netmask": "16" } }'

# The response:
{
}

# The result:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets?name=Subnet-
003&fields=**" -H "accept: application/hal+json"
{
"records": [
  {
    "uuid": "79ff5a5e-59b7-11ec-8981-005056a7077f",
    "name": "Subnet-003",
    "ipspace": {
      "uuid": "36569d0f-5863-11ec-8981-005056a7077f",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/36569d0f-5863-11ec-8981-
005056a7077f"
        }
      }
    },
    "broadcast_domain": {
      "uuid": "6577524b-5863-11ec-8981-005056a7077f",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/6577524b-5863-
11ec-8981-005056a7077f"
        }
      }
    },
    "subnet": {
      "address": "10.3.0.0",
      "netmask": "16",
      "family": "ipv4"
    },
```

```
    "total_count": 0,
    "used_count": 0,
    "available_count": 0,
    "_links": {
      "self": {
        "href": "/api/network/ip/subnets/79ff5a5e-59b7-11ec-8981-
005056a7077f?fields=**"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/subnets?name=Subnet-003&fields=**"
  }
}
}
```

Creating an IP subnet using all parameters.

The following example shows the record returned after the creation of an IP subnet setting all parameters.

```
# The API:
/api/network/ip/subnets

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/subnets" -H "accept:
application/hal+json" -d '{ "name": "Subnet-004", "ipspace": { "name":
"Default", "uuid": "36569d0f-5863-11ec-8981-005056a7077f" },
"broadcast_domain": { "name": "Default", "uuid": "6577524b-5863-11ec-8981-
005056a7077f" }, "subnet": { "address": "10.4.1.0", "netmask": "24" },
"gateway": "10.4.1.1", "ip_ranges": [ { "start": "10.4.1.30", "end":
"10.4.1.39" }, { "start": "10.4.1.150", "end": "10.4.1.229" } ],
"fail_if_lifs_conflict": "false" }'

# The response:
{
}

# The result:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets?name=Subnet-
```

```
004&fields=**" -H "accept: application/hal+json"
{
"records": [
  {
    "uuid": "0e0a19e7-59ba-11ec-8981-005056a7077f",
    "name": "Subnet-004",
    "ipspace": {
      "uuid": "36569d0f-5863-11ec-8981-005056a7077f",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/36569d0f-5863-11ec-8981-
005056a7077f"
        }
      }
    },
    "broadcast_domain": {
      "uuid": "6577524b-5863-11ec-8981-005056a7077f",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/6577524b-5863-
11ec-8981-005056a7077f"
        }
      }
    },
    "subnet": {
      "address": "10.4.1.0",
      "netmask": "24",
      "family": "ipv4"
    },
    "gateway": "10.4.1.1",
    "ip_ranges": [
      {
        "start": "10.4.1.30",
        "end": "10.4.1.39",
        "family": "ipv4"
      },
      {
        "start": "10.4.1.150",
        "end": "10.4.1.229",
        "family": "ipv4"
      }
    ],
    "available_ip_ranges": [
      {
```

```
        "start": "10.4.1.30",
        "end": "10.4.1.39",
        "family": "ipv4"
      },
      {
        "start": "10.4.1.150",
        "end": "10.4.1.229",
        "family": "ipv4"
      }
    ],
    "total_count": 90,
    "used_count": 0,
    "available_count": 90,
    "_links": {
      "self": {
        "href": "/api/network/ip/subnets/0e0a19e7-59ba-11ec-8981-
005056a7077f?fields=**"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/subnets?name=Subnet-004&fields=**"
  }
}
}
```


Updating IP subnets

You can use the IP subnets PATCH API to update the attributes of an IP subnet.

Examples

Updating the name of an IP subnet

The following example shows how the PATCH request changes the name.

```
# The API:
/api/network/ip/subnets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-
11ec-8981-005056a7077f" -H "accept: application/hal+json" -d '{ "name":
"Subnet-004-NewName" }'

# The response:
{
}

# The result:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-11ec-
8981-005056a7077f?fields=name" -H "accept: application/hal+json"
{
"uuid": "0e0a19e7-59ba-11ec-8981-005056a7077f",
"name": "Subnet-004-NewName",
"_links": {
  "self": {
    "href": "/api/network/ip/subnets/0e0a19e7-59ba-11ec-8981-005056a7077f"
  }
}
}
```

Updating the ip_ranges of an IP subnet

The following example shows how the PATCH request updates the ip_ranges.

```
# The API:
/api/network/ip/subnets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-
11ec-8981-005056a7077f" -H "accept: application/hal+json" -d '{
"ip_ranges": [ { "start": "10.4.1.20", "end": "10.4.1.239" } ] }'

# The response:
{
}

# The result:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-11ec-
8981-005056a7077f?fields=ip_ranges" -H "accept: application/hal+json"
{
"uuid": "0e0a19e7-59ba-11ec-8981-005056a7077f",
"name": "Subnet-004-NewName",
"ip_ranges": [
  {
    "start": "10.4.1.20",
    "end": "10.4.1.239",
    "family": "ipv4"
  }
],
"_links": {
  "self": {
    "href": "/api/network/ip/subnets/0e0a19e7-59ba-11ec-8981-005056a7077f"
  }
}
}
```

Deleting IP subnets

You can use the IP subnets DELETE API to delete an IP subnet.

Example

Deleting an IP subnet

The following DELETE request deletes a specific network IP subnet.

```
# The API:
/api/network/ip/subnets/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-
11ec-8981-005056a7077f"

# The response:
{
}

# The result:
curl -X GET "https://<mgmt-ip>/api/network/ip/subnets/0e0a19e7-59ba-11ec-
8981-005056a7077f" -H "accept: application/hal+json"
{
"error": {
  "message": "entry doesn't exist",
  "code": "4",
  "target": "uuid"
}
}
```

Retrieve details for all subnets

GET `/network/ip/subnets`

Introduced In: 9.11

Retrieves details for all subnets.

Related ONTAP Commands

- `network subnet show`

Parameters

Name	Type	In	Required	Description
ip_ranges.end	string	query	False	Filter by ip_ranges.end
ip_ranges.family	string	query	False	Filter by ip_ranges.family

Name	Type	In	Required	Description
ip_ranges.start	string	query	False	Filter by ip_ranges.start
broadcast_domain.uuid	string	query	False	Filter by broadcast_domain.uuid
broadcast_domain.name	string	query	False	Filter by broadcast_domain.name
total_count	integer	query	False	Filter by total_count
subnet.family	string	query	False	Filter by subnet.family
subnet.netmask	string	query	False	Filter by subnet.netmask
subnet.address	string	query	False	Filter by subnet.address
ipspace.name	string	query	False	Filter by ipspace.name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
uuid	string	query	False	Filter by uuid
used_count	integer	query	False	Filter by used_count
name	string	query	False	Filter by name
gateway	string	query	False	Filter by gateway
available_ip_ranges.end	string	query	False	Filter by available_ip_ranges.end
available_ip_ranges.family	string	query	False	Filter by available_ip_ranges.family

Name	Type	In	Required	Description
available_ip_ranges.start	string	query	False	Filter by available_ip_ranges.start
available_count	integer	query	False	Filter by available_count
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[ip_subnet]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "available_count": 0,
      "available_ip_ranges": [
        {
          "end": "10.10.10.7",
          "family": "string",
          "start": "10.10.10.7"
        }
      ],
      "broadcast_domain": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "fail_if_lifs_conflict": true,
      "gateway": "10.1.1.1",
      "ip_ranges": [
        {
          "end": "10.10.10.7",
          "family": "string",
          "start": "10.10.10.7"
        }
      ],
      "ipspace": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "subnet1",
      "subnet": {
        "address": "10.10.10.7",
        "family": "string",
        "netmask": "24"
      },
      "total_count": 0,
      "used_count": 0,
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
start	string	IPv4 or IPv6 address

broadcast_domain

The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

ipspace

The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_subnet

Name	Type	Description
_links	_links	
available_count	integer	
available_ip_ranges	array[ip_address_range]	
broadcast_domain	broadcast_domain	The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	
ipspace	ipspace	The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.
name	string	Subnet name

Name	Type	Description
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new named subnet

POST `/network/ip/subnets`

Introduced In: 9.11

Creates a new named subnet.

Required properties

- `name` - Name of the subnet to create.
- `broadcast_domain` - Broadcast domain containing the subnet.
- `ipspace` - IPspace containing the subnet. Required only if `broadcast_domain.uuid` is not provided.
- `subnet.address` - IP address for the subnet.
- `subnet.netmask` - IP netmask of the subnet.

Recommended property values

Default property values

If not specified in POST, the following default property values are assigned:

- `gateway` - no gateway
- `ip_ranges` - empty
- `fail_if_lifs_conflict` - *true*

Related ONTAP commands

- `network subnet create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
available_count	integer	
available_ip_ranges	array[ip_address_range]	
broadcast_domain	broadcast_domain	The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.
fail_if_lifs_conflict	boolean	This action will fail if any existing interface is using an IP address in the ranges provided. Set this to false to associate any manually addressed interfaces with the subnet and allow the action to succeed.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	

Name	Type	Description
ipspace	ipspace	The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.
name	string	Subnet name
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

Example request

```
{
  "available_count": 0,
  "available_ip_ranges": [
    {
      "end": "10.10.10.7",
      "start": "10.10.10.7"
    }
  ],
  "broadcast_domain": {
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "gateway": "10.1.1.1",
  "ip_ranges": [
    {
      "end": "10.10.10.7",
      "start": "10.10.10.7"
    }
  ],
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "subnet1",
  "subnet": {
    "address": "10.10.10.7",
    "netmask": "24"
  },
  "total_count": 0,
  "used_count": 0,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[ip_subnet]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "available_count": 0,
      "available_ip_ranges": [
        {
          "end": "10.10.10.7",
          "start": "10.10.10.7"
        }
      ],
      "broadcast_domain": {
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "gateway": "10.1.1.1",
      "ip_ranges": [
        {
          "end": "10.10.10.7",
          "start": "10.10.10.7"
        }
      ],
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "subnet1",
      "subnet": {
        "address": "10.10.10.7",
        "netmask": "24"
      },
      "total_count": 0,
      "used_count": 0,
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1377658	Invalid gateway for subnet in IPspace.
1377659	Subnet would overlap with existing subnet named in IPspace.
1377660	A subnet with the name already exists in the IPspace.
1377661	Subnet in IPspace cannot use subnet address because that address is already used by another subnet in the same IPspace.
1377662	The IP range address is not within the subnet in IPspace.
1377663	The specified IP address range of subnet in IPspace contains an address already in use by a LIF.
1377664	The specified IP address range of subnet in IPspace contains an address already in use by the Service Processor.
1377673	The addresses provided must have the same address family.
1377675	The netmask of the interface did not match the netmask of the subnet.
1377681	Cannot update LIF associations for LIF. The broadcast domain of the LIF does not match the broadcast domain of the subnet.
1377682	IPv6 is not enabled in the cluster.
1966269	IPv4 Addresses must have a prefix length between 1 and 32.
1967082	The specified ipspace.name does not match the IPspace name of specified ipspace.uuid
53282568	The subnet.address must be specified together with subnet.netmask.
53282569	The specified subnet.netmask is not valid.
53282570	Each pair of ranges must have ip_ranges.start less than or equal to ip_ranges.end.

Error Code	Description
53282571	The ip_ranges.start and ip_ranges.end fields must have the same number of items.
53282573	Broadcast domain is a required parameter. The broadcast_domain.name and/or the broadcast_domain.uuid must be specified.
53282574	The specified broadcast_domain and ipspace parameters do not match.
53282575	Operation might have left configuration in an inconsistent state. Unable to set UUID for created entry.
53282576	The specified ipspace.uuid is invalid.
53282577	The specified broadcast_domain.uuid is invalid.
53282578	The specified broadcast_domain.name does not match the IPspace name of specified broadcast_domain.uuid
53282579	Missing the ipspace.name or ipspace.uuid parameter.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
start	string	IPv4 or IPv6 address

broadcast_domain

The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

ipspace

The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_subnet

Name	Type	Description
available_count	integer	
available_ip_ranges	array[ip_address_range]	
broadcast_domain	broadcast_domain	The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.
fail_if_lifs_conflict	boolean	This action will fail if any existing interface is using an IP address in the ranges provided. Set this to false to associate any manually addressed interfaces with the subnet and allow the action to succeed.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	
ipspace	ipspace	The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.
name	string	Subnet name
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an IP subnet

DELETE `/network/ip/subnets/{uuid}`

Introduced In: 9.11

Deletes an IP subnet.

Related ONTAP commands

- `network subnet delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP subnet UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Fill error codes below.
ONTAP Error Response Codes

Error Code	Description
1377663	The specified IP address range of subnet in IPspace contains an address already in use by a LIF.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve IP subnet details

GET `/network/ip/subnets/{uuid}`

Introduced In: 9.11

Retrieves details for a specific IP subnet.

Related ONTAP commands

- `network subnet show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP subnet UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
available_count	integer	
available_ip_ranges	array[ip_address_range]	
broadcast_domain	broadcast_domain	The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	
ipspace	ipspace	The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.
name	string	Subnet name
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "available_count": 0,
  "available_ip_ranges": [
    {
      "end": "10.10.10.7",
      "family": "string",
      "start": "10.10.10.7"
    }
  ],
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "fail_if_lifs_conflict": true,
  "gateway": "10.1.1.1",
  "ip_ranges": [
    {
      "end": "10.10.10.7",
      "family": "string",
      "start": "10.10.10.7"
    }
  ],
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "subnet1",
  "subnet": {
    "address": "10.10.10.7",
```

```
    "family": "string",
    "netmask": "24"
  },
  "total_count": 0,
  "used_count": 0,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
start	string	IPv4 or IPv6 address

broadcast_domain

The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

ipspace

The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an IP subnet

PATCH `/network/ip/subnets/{uuid}`

Introduced In: 9.11

Updates an IP subnet.

Related ONTAP commands

- `network subnet modify`

- `network subnet rename`
- `network subnet add-ranges`
- `network subnet remove-ranges`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP subnet UUID

Request Body

Name	Type	Description
available_count	integer	
available_ip_ranges	array[ip_address_range]	
fail_if_lifs_conflict	boolean	This action will fail if any existing interface is using an IP address in the ranges provided. Set this to false to associate any manually addressed interfaces with the subnet and allow the action to succeed.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	
name	string	Subnet name
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

Example request

```
{
  "available_count": 0,
  "available_ip_ranges": [
    {
      "end": "10.10.10.7",
      "start": "10.10.10.7"
    }
  ],
  "gateway": "10.1.1.1",
  "ip_ranges": [
    {
      "end": "10.10.10.7",
      "start": "10.10.10.7"
    }
  ],
  "name": "subnet1",
  "subnet": {
    "address": "10.10.10.7",
    "netmask": "24"
  },
  "total_count": 0,
  "used_count": 0,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

Fill error codes below.
ONTAP Error Response Codes

Error Code	Description
1377658	Invalid gateway for subnet in IPspace.
1377659	Subnet would overlap with existing subnet named in IPspace.

Error Code	Description
1377660	A subnet with the name already exists in the IPspace.
1377661	Subnet in IPspace cannot use subnet address because that address is already used by subnet in the same IPspace.
1377662	The IP range address is not within the subnet in IPspace.
1377663	The specified IP address range of subnet in IPspace contains an address already in use by a LIF.
1377664	The specified IP address range of subnet in IPspace contains an address already in use by the Service Processor.
1377669	The specified gateway address exists in a configured range.
1377673	The addresses provided must have the same address family.
1377674	Modifying the netmask is not supported because the subnet has one or more interfaces associated with it.
1377675	The netmask of the interface did not match the netmask of the subnet.
1377681	Cannot update LIF associations for LIF. The broadcast domain of the LIF does not match the broadcast domain of the subnet.
1966269	IPv4 Addresses must have a prefix length between 1 and 32.
1966778	IPv6 addresses must have a prefix length between 1 and 127.
53282568	The subnet.address must be specified together with subnet.netmask.
53282569	The specified subnet.netmask is not valid.
53282570	Each pair of ranges must have ip_ranges.start less than or equal to ip_ranges.end.
53282571	The ip_ranges.start and ip_ranges.end fields must have the same number of items.
53282572	PATCH partially succeeded with error.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
start	string	IPv4 or IPv6 address

broadcast_domain

The broadcast domain that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

ipspace

The IPspace that the subnet is associated with. Either the UUID or name must be supplied on POST.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_subnet

Name	Type	Description
available_count	integer	
available_ip_ranges	array[ip_address_range]	
fail_if_lifs_conflict	boolean	This action will fail if any existing interface is using an IP address in the ranges provided. Set this to false to associate any manually addressed interfaces with the subnet and allow the action to succeed.
gateway	string	The IP address of the gateway for this subnet.
ip_ranges	array[ip_address_range]	
name	string	Subnet name
subnet	ip_info	IP information
total_count	integer	
used_count	integer	
uuid	string	The UUID that uniquely identifies the subnet.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage network IPspaces

Network ipspaces endpoint overview

Overview

An IPspace is an addressing domain within which each IP address is unique. The same address may appear in a different IPspace, but the matching addresses are considered to be distinct. SVMs and broadcast domains, and therefore IP interfaces and Ethernet ports, are associated with a single IPspace. This endpoint supports the following operations: GET (collection and instance), POST, PATCH, and DELETE.

Retrieving IPspace information

You can use the IPspaces GET API to retrieve all IPspaces configured in the cluster, including built-in and custom IPspaces, and specifically requested IPspaces.

Examples

Retrieving a list of the IPspaces in the cluster

The following example returns the requested list of IPspaces configured in the cluster.

```
# The API:
/api/network/ipspaces

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ipspaces?fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "dcc7e79c-5acc-11e8-b9de-005056b42b32",
    "name": "Default",
    "_links": {
      "self": {
```

```
        "href": "/api/network/ipspaces/dcc7e79c-5acc-11e8-b9de-
005056b42b32"
      }
    }
  },
  {
    "uuid": "dfd3c1b2-5acc-11e8-b9de-005056b42b32",
    "name": "Cluster",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/dfd3c1b2-5acc-11e8-b9de-
005056b42b32"
      }
    }
  },
  {
    "uuid": "dedec1be-5aec-1eee-beee-0eee56be2b3e",
    "name": "Ipspace1",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/dedec1be-5aec-1eee-beee-
0eee56be2b3e"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/network/ipspaces?fields=*"
  }
}
}
```


Retrieving a specific IPspace in the cluster

The following example returns the specific IPspace requested. The system returns an error if there is no IPspace with the requested UUID.

```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ipspaces/dfd3c1b2-5acc-11e8-
b9de-005056b42b32?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "dcc7e79c-5acc-11e8-b9de-005056b42b32",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/dcc7e79c-5acc-11e8-b9de-005056b42b32"
    }
  }
}
```

Creating IPspaces

You can use the network IPspaces POST API to create IPspaces.

Example

Creating an IPspace

The following output displays the record returned after the creation of an IPspace with the name "ipspace1".

```
# The API:
/api/network/ipspaces

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ipspaces?return_records=true"
-H  "accept: application/hal+json" -d "{  \"name\": \"ipspace2\"}"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "4165655e-0528-11e9-bd68-005056bb046a",
    "name": "ipspace2",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/4165655e-0528-11e9-bd68-
005056bb046a"
      }
    }
  }
]
}
```

Updating IPspaces

You can use the IPspaces PATCH API to update the attributes of the IPspace.

Example

Updating the name of an IPspace

The following PATCH request is used to update the name of the IPspace from "ipspace2" to "ipspace20".

```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ipspaces/4165655e-0528-11e9-
bd68-005056bb046a" -H  "accept: application/hal+json" -d "{  \"name\":
\"ipspace20\"}"
```

Deleting IPspaces

You can use the IPspaces DELETE API to delete an IPspace.

Example

Deleting an IPspace

The following DELETE request is used to delete an IPspace.

```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ipspaces/4165655e-0528-11e9-
bd68-005056bb046a" -H  "accept: application/hal+json" -H  "Content-Type:
application/json"
```

Retrieve IPspaces for a cluster

GET `/network/ipspaces`

Introduced In: 9.6

Retrieves a collection of IPspaces for the entire cluster.

Related ONTAP commands

- `network ipspace show`

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[ipspace]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "ipspace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Create a new domain with unique IP addresses

POST `/network/ipspaces`

Introduced In: 9.6

Creates a new domain within which IP addresses are unique. SVMs, ports, and networks are scoped to a single IPspace.

Required properties

- `name` - Name of the IPspace to create.

Related ONTAP commands

- `network ipspace create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

Example request

```
{
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1377261	An IPspace with the same name already exists.
1966449	Invalid IPspace name in MetroCluster configurations.
1966586	The specified IPspace name is invalid because it is already used by a peered SVM.
1967102	A POST operation might have left the configuration in an inconsistent state. Check the configuration.
9240587	Name cannot be empty.
9240588	The name is too long.
9240589	Invalid character in name.
9240590	The name is reserved by the system.
9240591	The name is not valid. The name is already in use by a cluster node, Vserver, or it is the name of the local cluster.
53281576	Cannot create IPspace because the maximum number of custom IPspaces has already been reached on the cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an IPspace object

DELETE `/network/ipspaces/{uuid}`

Introduced In: 9.6

Deletes an IPspace object.

Related ONTAP commands

- `network ipspace delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPspace UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966309	The IPspace cannot be removed because it is being used by the audit log forwarding feature.
1966333	IPspace can't be removed because it has SVMs assigned.
1969180	Cannot delete an IPspace with an existing broadcast domain.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve information about an IPspace

GET `/network/ipspaces/{uuid}`

Introduced In: 9.6

Retrieves information about a specific IPspace.

Related ONTAP commands

- `network ipspace show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPspace UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an IPspace object

PATCH `/network/ipspaces/{uuid}`

Introduced In: 9.6

Updates an IPspace object.

Related ONTAP commands

- `network ipspace rename`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPspace UUID

Request Body

Name	Type	Description
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

Example request

```
{
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1377256	Another IPspace with the same name exists.
1377259	System-defined IPspaces cannot be modified or removed.
1966449	Invalid IPspace name in MetroCluster configurations.
9240587	IPspace name cannot be empty.
9240588	The specified name is too long.
9240589	Invalid character in specified name.
9240590	Invalid name, the name is reserved by the system.

Error Code	Description
9240591	Invalid name. The name is already in use by a cluster node, Vserver, or it is the name of the local cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Object-store

Manage S3 buckets

Protocols S3 buckets endpoint overview

Overview

An S3 bucket is a container of objects. Each bucket defines an object namespace. S3 server requests specify objects using a bucket-name and object-name pair. An object consists of data, along with optional metadata and access controls, that is accessible using a name. An object resides within a bucket. There can be more than one bucket in an S3 server. Buckets that are created for the server are associated with an S3 user that is created on the S3 server.

Examples

Retrieving all fields for all S3 buckets of a cluster

```
# The API:
/api/protocols/s3/buckets

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/s3/buckets?fields=**&return_records=true" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "527812ab-7c6d-11e9-97e8-0050568ea123",
    "name": "bucket-2",
    "volume": {
      "name": "fg_oss_1558514455",
      "uuid": "51276f5f-7c6d-11e9-97e8-0050568ea123"
    },
    "size": 209715200,
    "logical_used_size": 157286400,
    "encryption": {
      "enabled": false
    },
    "comment": "S3 bucket.",
    "qos_policy": {
      "min_throughput_iops": 0,
```

```
      "min_throughput_mbps": 0,
      "max_throughput_iops": 1000,
      "max_throughput_mbps": 0,
      "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
      "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
    },
    "snapshot-policy": {
      "name": "default-1weekly",
      "uuid": "f9c5f090-4ac8-11ef-ba24-005056a7ceb6"
    },
  },
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "a8234aec-7e06-11e9-97e8-0050568ea123",
    "name": "bucket-1",
    "volume": {
      "name": "fg_oss_1558690256",
      "uuid": "a36a1ea7-7e06-11e9-97e8-0050568ea123"
    },
    "size": 1677721600,
    "logical_used_size": 0,
    "encryption": {
      "enabled": false
    },
    "comment": "bucket2",
    "qos_policy": {
      "min_throughput_iops": 0,
      "min_throughput_mbps": 0,
      "max_throughput_iops": 1000,
      "max_throughput_mbps": 0,
      "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
      "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
    }
  },
  {
    "svm": {
      "uuid": "ee30eb2d-7ae1-11e9-8abe-0050568ea123",
      "name": "vs2"
    },
    "uuid": "19283b75-7ae2-11e9-8abe-0050568ea123",
    "name": "bucket-3",
    "volume": {
      "name": "fg_oss_1558690257",
```

```
      "uuid": "a46a1ea7-7e06-11e9-97e8-0050568ea123"
    },
    "size": 1677721600,
    "logical_used_size": 1075838976,
    "encryption": {
      "enabled": false
    },
    "comment": "bucket3",
    "qos_policy": {
      "min_throughput_iops": 0,
      "min_throughput_mbps": 0,
      "max_throughput_iops": 1000,
      "max_throughput_mbps": 0,
      "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
      "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
    },
    "policy": {
      "statements": [
        {
          "effect": "allow",
          "actions": [
            "*"
          ],
          "principals": [
            "Alice"
          ],
          "resources": [
            "bucket-3",
            "bucket-3/*"
          ],
          "sid": "fullAccessForAliceToBucket",
          "conditions": [
            {
              "operator": "ip_address",
              "source_ips": [
                "1.1.1.1/10"
              ]
            }
          ]
        }
      ]
    },
    "cors": {
      "rules": [
        {
          "id": "string",
```

```
          "allowed_origins": [
            "http://www.example.com"
          ],
          "allowed_methods": [
            "PUT",
            "DELETE"
          ],
          "allowed_headers": [
            "x-amz-request-id"
          ],
          "expose_headers": [
            "http://www.example.com"
          ],
          "max_age_seconds": 1024
        }
      ]
    }
  }
],
"num_records": 3
}
```


Retrieving all S3 buckets of a cluster ordered by size

```
# The API:
/api/protocols/s3/buckets

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/s3/buckets?return_records=true&order_by=size" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "754389d0-7e13-11e9-bfdc-0050568ea123",
    "name": "bb1",
    "size": 838860800
  },
  {
    "svm": {
      "uuid": "ee30eb2d-7ae1-11e9-8abe-0050568ea123",
      "name": "vs2"
    },
    "uuid": "19283b75-7ae2-11e9-8abe-0050568ea123",
    "name": "bb2",
    "size": 838860800
  },
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "a8234aec-7e06-11e9-97e8-0050568ea123",
    "name": "bucket-1",
    "size": 1677721600
  }
],
"num_records": 3
}
```

Retrieving all S3 buckets of a cluster with name "bb2"

```
# The API:
/api/protocols/s3/buckets

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/s3/buckets?name=bb2&return_records=true" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "087d940e-7e15-11e9-bfdc-0050568ea123",
    "name": "bb2"
  },
  {
    "svm": {
      "uuid": "ee30eb2d-7ae1-11e9-8abe-0050568ea123",
      "name": "vs2"
    },
    "uuid": "19283b75-7ae2-11e9-8abe-0050568ea123",
    "name": "bb2"
  }
],
"num_records": 2
}
```

Retrieving the specified bucket associated with an SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/buckets/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/527812ab-7c6d-11e9-97e8-0050568ea123" -H "accept:
application/json"

# The response:
{
"svm": {
  "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
  "name": "vs1"
},
"uuid": "527812ab-7c6d-11e9-97e8-0050568ea123",
"name": "bucket-2",
"volume": {
  "name": "fg_oss_1558514455",
  "uuid": "51276f5f-7c6d-11e9-97e8-0050568ea123"
},
"size": 209715200,
"logical_used_size": 157286400,
"encryption": {
  "enabled": false
},
"comment": "S3 bucket.",
"qos_policy": {
  "min_throughput_iops": 0,
  "min_throughput_mbps": 0,
  "max_throughput_iops": 1000,
  "max_throughput_mbps": 0,
  "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
  "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
}
}
```

Creating an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-
8c06-0050568ea123\" } ], \"comment\": \"S3 bucket.\",
\"constituents_per_aggregate\": 4, \"name\": \"bucket-3\", \"svm\": {
\"name\": \"vs1\" } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with QoS policy for an SVM

```
# The API:
/api/protocols/s3/buckets

# The call:
curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"comment\": \"S3 bucket.\", \"name\": \"bucket-3\", \"svm\": { \"name\":
\"vs1\" },  \"qos_policy\": { \"min_throughput_iops\": 0,
\"min_throughput_mbps\": 0, \"max_throughput_iops\": 1000000,
\"max_throughput_mbps\": 900000, \"uuid\": \"02d07a93-6177-11ea-b241-
000c293feac8\", \"name\":
\"vs0_auto_gen_policy_02cfa02a_6177_11ea_b241_000c293feac8\" } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with policies and conditions for an SVM

```
# The API:
/api/protocols/s3/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-
8c06-0050568ea123\" } ], \"comment\": \"S3 bucket.\",
\"constituents_per_aggregate\": 4, \"name\": \"bucket-3\", \"policy\": {
\"statements\": [ { \"actions\": [ \"GetObject\" ], \"conditions\": [ {
\"operator\": \"ip_address\", \"source_ips\": [ \"1.1.1.1/23\",
\"1.2.2.2/20\" ] } ], \"effect\": \"allow\", \"resources\": [ \"bucket-
3/policies/examples/*\" ], \"sid\": \"AccessToGetObjectForAllUsersofSVM\"
}, { \"actions\": [ \"*Object\" ], \"effect\": \"deny\", \"principals\": [
\"mike\" ], \"resources\": [ \"bucket-3/policy-docs/*\", \"bucket-
3/confidential-*\" ], \"sid\": \"DenyAccessToObjectForMike\" }, {
\"actions\": [ \"GetObject\" ], \"effect\": \"allow\", \"principals\": [
\"*\" ], \"resources\": [ \"bucket-3/readme\" ], \"sid\":
\"AnonymousAccessToGetObjectForUsers\" } ] }, \"svm\": { \"uuid\":
\"259b4e46-2d33-11ea-9145-005056bbbec1\" } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
```

```
    "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
      }
    }
  }
  }
```


Creating an S3 bucket and CORS rules for an SVM

```
# The API:
/api/protocols/s3/buckets

# The call:

curl -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-
8c06-0050568ea123\" } ], \"comment\": \"S3 bucket.\",
\"constituents_per_aggregate\": 4, \"name\": \"bucket-3\", \"cors\": {
\"rules\": [{ \"allowed_headers\": [ \"x-amz-request-id\" ],
\"allowed_methods\": [ \"PUT\", \"DELETE\" ], \"allowed_origins\": [
\"http://www.example.com\" ], \"expose_headers\": [
\"http://www.example.com\" ], \"id\": \"id1\", \"max_age_seconds\": 1024
}]}, \"svm\": { \"uuid\": \"259b4e46-2d33-11ea-9145-005056bbbec1\" }}"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with a bucket lifecycle management rule for an SVM

```
# The API:
/api/protocols/s3/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-
8c06-0050568ea123\" } ], \"comment\": \"S3 bucket.\",
\"constituents_per_aggregate\": 4, \"name\": \"bucket-4\",
\"lifecycle_management\": { \"rules\": [ { \"name\": \"rule1\",
\"expiration\": { \"object_age_days\" : \"1000\" },
\"abort_incomplete_multipart_upload\" : { \"after_initiation_days\" : 200
}, \"object_filter\": { \"prefix\" : \"obj1*/\" ,  \"size_greater_than\" :
\"1000\" } }, { \"name\": \"rule2\", \"object_filter\": {
\"size_greater_than\" : \"50\" }, \"expiration\": { \"object_age_days\" :
\"5000\" } } ] } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 18 April 2022 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/?name=bucket-4
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-4",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
```

```
    }
  }
}
}
```

Creating an S3 bucket with a snapshot-policy

```
# The API:
/api/protocols/s3/buckets

# The call:
curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/buckets?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"comment\":
\"S3 snapshot policy bucket.\", \"snapshot_policy\": { \"name\":
\"default-1weekly\", \"uuid\": \"f9c5f090-4ac8-11ef-ba24-005056a7ceb6\" },
\"name\": \"bucket-7\", \"svm.uuid\": \"8c38f10b-4871-11ef-aab5-
005056a7ceb6\" }"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 25 Jul 2024 17:16:15 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/8c38f10b-4871-11ef-aab5-
005056a7ceb6/buckets/9f21f404-4aa4-11ef-ba24-005056a7ceb6
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "99978136-4aa9-11ef-ba24-005056a7ceb6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/99978136-4aa9-11ef-ba24-005056a7ceb6"
    }
  }
}
}
```

Updating an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/buckets/259b4e46-2d33-
11ea-9145-005056bbbec1/376a2efd-2d4d-11ea-9c30-
005056bb883a?return_records=true" -H "accept:
application/json?return_records=true" -H "Content-Type: application/json"
-d "{ \"comment\": \"Bucket modified.\", \"size\": 111111111111,
\"qos_policy\": { \"min_throughput_iops\": 0, \"min_throughput_mbps\": 0,
\"max_throughput_iops\": 1000000, \"max_throughput_mbps\": 900000,
\"uuid\": \"02d07a93-6177-11ea-b241-000c293feac8\", \"name\":
\"vs0_auto_gen_policy_02cfa02a_6177_11ea_b241_000c293feac8\" }}"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating an S3 bucket policy for an SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/buckets/259b4e46-2d33-
11ea-9145-005056bbbec1/376a2efd-2d4d-11ea-9c30-
005056bb883a?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"policy\": { \"statements\": [ {
\"actions\": [ \"*\" ], \"conditions\": [ { \"operator\": \"ip_address\",
\"source_ips\": [ \"1.1.1.5/23\" ] } ], \"effect\": \"allow\",
\"resources\": [ \"*\" ], \"sid\": \"fullAccessForAllPrincipalsToBucket\"}
] } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating an S3 bucket CORS configuration for an SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/buckets/259b4e46-2d33-
11ea-9145-005056bbbec1/376a2efd-2d4d-11ea-9c30-
005056bb883a?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"cors\": { \"rules\": [{
\"allowed_headers\": [ \"x-amz-request-id\" ], \"allowed_methods\": [
\"PUT\", \"DELETE\" ], \"allowed_origins\": [ \"http://www.example.com\"
], \"expose_headers\": [ \"http://www.example.com\" ], \"id\": \"id1\",
\"max_age_seconds\": 1024 } ] } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating the snapshot-policy for an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/buckets/8c38f10b-4871-
11ef-aab5-005056a7ceb6/eec0d90e-4934-11ef-947d-005056a7ceb6" -H "accept:
application/json" -H "Content-Type: application/json" -d "{
\"snapshot_policy\": { \"name\": \"default-1weekly\", \"uuid\":
\"f9c5f090-4ac8-11ef-ba24-005056a7ceb6\" } }"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 25 Jul 2024 17:26:17 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "003a4cad-4aab-11ef-ba24-005056a7ceb6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/003a4cad-4aab-11ef-ba24-005056a7ceb6"
    }
  }
}
}
```

Deleting an S3 bucket for a specified SVM

```
# The API:
/api/protocols/s3/buckets/{svm.uuid}/{uuid}

# The call:
curl -iku admin:<password> -X DELETE "https://<mgmt-
ip>/api/protocols/s3/buckets/259b4e46-2d33-11ea-9145-
005056bbbec1/98528221-2d52-11ea-892e-005056bbbec1?return_records=true" -H
"accept: application/json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:40:17 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "b3af4a54-7e18-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b3af4a54-7e18-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Retrieve all S3 buckets for all SVMs

GET `/protocols/s3/buckets`

Introduced In: 9.7

Retrieves all S3 buckets for all SVMs. Note that in order to retrieve S3 bucket policy conditions, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket show`
- `vserver object-store-server bucket policy statement show`
- `vserver object-store-server bucket policy-statement-condition show`
- `vserver object-store-server bucket lifecycle-management-rule show`
- `vserver object-store-server bucket cors-rule show`

Learn more

- DOC /protocols/s3/buckets

Parameters

Name	Type	In	Required	Description
nas_path	string	query	False	Filter by nas_path • Introduced in: 9.12
uuid	string	query	False	Filter by uuid
is_consistent_etag	boolean	query	False	Filter by is_consistent_etag • Introduced in: 9.17
type	string	query	False	Filter by type • Introduced in: 9.12
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
policy.statements.resources	string	query	False	Filter by policy.statements.resources • Introduced in: 9.8
policy.statements.sid	string	query	False	Filter by policy.statements.sid • Introduced in: 9.8 • maxLength: 256 • minLength: 0

Name	Type	In	Required	Description
policy.statements.effect	string	query	False	Filter by policy.statements.effect • Introduced in: 9.8
policy.statements.actions	string	query	False	Filter by policy.statements.actions • Introduced in: 9.8
policy.statements.conditions.prefixes	string	query	False	Filter by policy.statements.conditions.prefixes • Introduced in: 9.8
policy.statements.conditions.max_keys	integer	query	False	Filter by policy.statements.conditions.max_keys • Introduced in: 9.8
policy.statements.conditions.operator	string	query	False	Filter by policy.statements.conditions.operator • Introduced in: 9.8
policy.statements.conditions.source_ips	string	query	False	Filter by policy.statements.conditions.source_ips • Introduced in: 9.8
policy.statements.conditions.usernames	string	query	False	Filter by policy.statements.conditions.usernames • Introduced in: 9.8

Name	Type	In	Required	Description
policy.statements.conditions.delimiters	string	query	False	Filter by policy.statements.conditions.delimiters • Introduced in: 9.8
policy.statements.principals	string	query	False	Filter by policy.statements.principals • Introduced in: 9.8
protection_status.destination.is_external_cloud	boolean	query	False	Filter by protection_status.destination.is_external_cloud • Introduced in: 9.12
protection_status.destination.is_ontap	boolean	query	False	Filter by protection_status.destination.is_ontap • Introduced in: 9.10
protection_status.destination.is_cloud	boolean	query	False	Filter by protection_status.destination.is_cloud • Introduced in: 9.10
protection_status.is_protected	boolean	query	False	Filter by protection_status.is_protected • Introduced in: 9.10
is_nas_path_mutable	boolean	query	False	Filter by is_nas_path_mutable • Introduced in: 9.17

Name	Type	In	Required	Description
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name • Introduced in: 9.16
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid • Introduced in: 9.16
name	string	query	False	Filter by name • maxLength: 63 • minLength: 3
versioning_state	string	query	False	Filter by versioning_state • Introduced in: 9.11
qos_policy.uuid	string	query	False	Filter by qos_policy.uuid • Introduced in: 9.8
qos_policy.min_throughput_iops	integer	query	False	Filter by qos_policy.min_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0

Name	Type	In	Required	Description
qos_policy.min_throughput_mbps	integer	query	False	Filter by qos_policy.min_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
qos_policy.max_throughput	string	query	False	Filter by qos_policy.max_throughput • Introduced in: 9.17
qos_policy.min_throughput	string	query	False	Filter by qos_policy.min_throughput • Introduced in: 9.17
qos_policy.max_throughput_iops	integer	query	False	Filter by qos_policy.max_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0
qos_policy.max_throughput_mbps	integer	query	False	Filter by qos_policy.max_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0

Name	Type	In	Required	Description
qos_policy.name	string	query	False	Filter by qos_policy.name • Introduced in: 9.8
lifecycle_management.rules.expiration.object_expiry_date	string	query	False	Filter by lifecycle_management.rules.expiration.object_expiry_date • Introduced in: 9.13
lifecycle_management.rules.expiration.object_age_days	integer	query	False	Filter by lifecycle_management.rules.expiration.object_age_days • Introduced in: 9.13
lifecycle_management.rules.expiration.expired_object_delete_marker	boolean	query	False	Filter by lifecycle_management.rules.expiration.expired_object_delete_marker • Introduced in: 9.13
lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days	integer	query	False	Filter by lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days • Introduced in: 9.13
lifecycle_management.rules.non_current_version_expiration.non_current_days	integer	query	False	Filter by lifecycle_management.rules.non_current_version_expiration.non_current_days • Introduced in: 9.13

Name	Type	In	Required	Description
lifecycle_management.rules.non_current_version_expiration.new_non_current_versions	integer	query	False	Filter by lifecycle_management.rules.non_current_version_expiration.new_non_current_versions • Introduced in: 9.13
lifecycle_management.rules.name	string	query	False	Filter by lifecycle_management.rules.name • Introduced in: 9.13 • maxLength: 256 • minLength: 0
lifecycle_management.rules.object_filter.tags	string	query	False	Filter by lifecycle_management.rules.object_filter.tags • Introduced in: 9.13
lifecycle_management.rules.object_filter.size_less_than	integer	query	False	Filter by lifecycle_management.rules.object_filter.size_less_than • Introduced in: 9.13
lifecycle_management.rules.object_filter.size_greater_than	integer	query	False	Filter by lifecycle_management.rules.object_filter.size_greater_than • Introduced in: 9.13

Name	Type	In	Required	Description
lifecycle_management.rules.object_filter.prefix	string	query	False	Filter by lifecycle_management.rules.object_filter.prefix • Introduced in: 9.13
lifecycle_management.rules.uuid	string	query	False	Filter by lifecycle_management.rules.uuid • Introduced in: 9.14
lifecycle_management.rules.bucket_name	string	query	False	Filter by lifecycle_management.rules.bucket_name • Introduced in: 9.14 • maxLength: 63 • minLength: 3
lifecycle_management.rules.svm.name	string	query	False	Filter by lifecycle_management.rules.svm.name • Introduced in: 9.14
lifecycle_management.rules.svm.uuid	string	query	False	Filter by lifecycle_management.rules.svm.uuid • Introduced in: 9.14
lifecycle_management.rules.enabled	boolean	query	False	Filter by lifecycle_management.rules.enabled • Introduced in: 9.13
encryption.enabled	boolean	query	False	Filter by encryption.enabled

Name	Type	In	Required	Description
retention.default_period	string	query	False	Filter by retention.default_period • Introduced in: 9.14
retention.mode	string	query	False	Filter by retention.mode • Introduced in: 9.14
audit_event_selector.access	string	query	False	Filter by audit_event_selector.access • Introduced in: 9.10
audit_event_selector.permission	string	query	False	Filter by audit_event_selector.permission • Introduced in: 9.10
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
role	string	query	False	Filter by role • Introduced in: 9.10
allowed	boolean	query	False	Filter by allowed • Introduced in: 9.12
cors.rules.allowed_methods	string	query	False	Filter by cors.rules.allowed_methods • Introduced in: 9.16

Name	Type	In	Required	Description
cors.rules.id	string	query	False	Filter by cors.rules.id • Introduced in: 9.16 • maxLength: 256 • minLength: 0
cors.rules.expose_headers	string	query	False	Filter by cors.rules.expose_headers • Introduced in: 9.16
cors.rules.allowed_origins	string	query	False	Filter by cors.rules.allowed_origins • Introduced in: 9.16
cors.rules.allowed_headers	string	query	False	Filter by cors.rules.allowed_headers • Introduced in: 9.16
cors.rules.max_age_seconds	integer	query	False	Filter by cors.rules.max_age_seconds • Introduced in: 9.16
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
logical_used_size	integer	query	False	Filter by logical_used_size

Name	Type	In	Required	Description
size	integer	query	False	Filter by size • Max value: 62672162783232000 • Min value: 199229440
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_bucket]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "audit_event_selector": {
        "access": "string",
        "permission": "string"
      },
      "comment": "S3 bucket.",
      "cors": {
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "allowed_headers": [
              "x-amz-request-id"
            ],
            "allowed_methods": [
              "PUT",
              "DELETE"
            ],
            "allowed_origins": [
              "http://www.example.com"
            ],
            "expose_headers": [
              "x-amz-date"
            ],
            "id": "string",
            "max_age_seconds": 1024
          }
        ]
      },
      "lifecycle_management": {
```

```
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "abort_incomplete_multipart_upload": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              }
            },
            "bucket_name": "bucket1",
            "expiration": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "object_age_days": 100,
              "object_expiry_date": "2039-09-22 20:00:00 -0400"
            },
            "name": "string",
            "non_current_version_expiration": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              }
            },
            "object_filter": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "prefix": "/logs",
              "size_greater_than": 10240,
              "size_less_than": 10485760,
              "tags": [
                "project1=projA",
                "project2=projB"
              ]
            },
```

```
            "svm": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
          }
        ]
      },
      "logical_used_size": 0,
      "name": "bucket1",
      "nas_path": "/",
      "policy": {
        "statements": [
          {
            "actions": [
              "GetObject",
              "PutObject",
              "DeleteObject",
              "ListBucket"
            ],
            "conditions": [
              {
                "delimiters": [
                  "/"
                ],
                "max_keys": [
                  1000
                ],
                "operator": "ip_address",
                "prefixes": [
                  "pref"
                ],
                "source_ips": [
                  "1.1.1.1",
                  "1.2.2.0/24"
                ],
                "usernames": [
                  "user1"
                ]
              }
            ],
```

```
            "effect": "allow",
            "principals": [
              "user1",
              "group/grp1",
              "nasgroup/group1"
            ],
            "resources": [
              "bucket1",
              "bucket1/*"
            ],
            "sid": "FullAccessToUser1"
          }
        ]
      },
      "qos_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "retention": {
```

```
        "default_period": "P10Y",
        "mode": "governance"
      },
      "role": "string",
      "size": 1677721600,
      "snapshot_policy": {
        "name": "default-1weekly",
        "uuid": "3675af31-431c-12fa-114a-20675afebc12"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "s3",
      "use_mirrored_aggregates": true,
      "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
      "versioning_state": "enabled",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.

Name	Type	Description
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.

Name	Type	Description
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the S3 bucket configuration for an SVM

POST `/protocols/s3/buckets`

Introduced In: 9.8

Creates the S3 bucket configuration of an SVM.

Important notes

- Each SVM can have one or more bucket configurations.
- Aggregate lists should be specified explicitly. If not specified, then the bucket is auto-provisioned as a FlexGroup volume.

- Constituents per aggregate specifies the number of components (or FlexVol volumes) per aggregate. Is specified only when an aggregate list is explicitly defined.
- An access policy can be created along with a bucket create. If creating an access policy fails, bucket configurations are saved and the access policy can be created using the PATCH endpoint.
- "qos_policy" can be specified if a bucket needs to be attached to a QoS group policy during creation time.
- "audit_event_selector" can be specified if a bucket needs to be specify access and permission type for auditing.
- A CORS configuration can be specified along with bucket creation.

Required properties

- `svm.uuid or svm.name` - Existing SVM in which to create the bucket configuration.
- `name` - Bucket name that is to be created.

Recommended optional properties

- `aggregates` - List of aggregates for the FlexGroup volume on which the bucket is hosted on.
- `constituents_per_aggregate` - Number of constituents per aggregate.
- `size` - Specifying the bucket size is recommended.
- `policy` - Specifying a policy enables users to perform operations on buckets; specifying the resource permissions is recommended.
- `qos_policy` - A QoS policy for buckets.
- `audit_event_selector` - Audit policy for buckets.
- `versioning_state` - Versioning state for buckets.
- `type` - Type of bucket.
- `nas_path` - NAS path to which the bucket corresponds to.
- `use_mirrored_aggregates` - Specifies whether mirrored aggregates are selected when provisioning a FlexGroup volume.
- `lifecycle_management` - Object store server lifecycle management policy.
- `retention.mode` - Object lock mode supported on the bucket.
- `retention.default_period` - Specifies the duration of default-retention applicable for objects on the object store bucket.
- `cors` - Specifying CORS rules enables the bucket to service the cross-origin requests.
- `snapshot_policy` - Snapshot policy for the bucket.
- `is_nas_path_mutable` - Specifies whether the NAS bucket mapping with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount.

Default property values

- `size` - 800MB
- `comment` - ""

- `aggregates` - No default value.
- `constituents_per_aggregate` - *4* , if an aggregates list is specified. Otherwise, no default value.
- `policy.statements.actions` - GetObject, PutObject, DeleteObject, ListBucket, ListBucketMultipartUploads, ListMultipartUploadParts, GetObjectTagging, PutObjectTagging, DeleteObjectTagging, GetBucketVersioning, PutBucketVersioning.
- `policy.statements.principals` - all S3 users and groups in the SVM or the NAS groups.
- `policy.statements.resources` - all objects in the bucket.
- `policy.statements.conditions` - list of bucket policy conditions.
- `versioning_state` - disabled.
- `use_mirrored_aggregates` - *true* for a MetroCluster configuration and *false* for a non-MetroCluster configuration.
- `type` - S3
- `retention.mode` - no_lock

Related ONTAP commands

- `vserver object-store-server bucket create`
- `vserver object-store-server bucket policy statement create`
- `vserver object-store-server bucket lifecycle-management-rule create`
- `vserver object-store-server bucket cors-rule create`

Learn more

- DOC /protocols/s3/buckets

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
aggregates	array[aggregates]	A list of aggregates for FlexGroup volume constituents where the bucket is hosted. If this option is not specified, the bucket is auto-provisioned as a FlexGroup volume.
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
constituents_per_aggregate	integer	Specifies the number of constituents or FlexVol volumes per aggregate. A FlexGroup volume consisting of all such constituents across all specified aggregates is created. This option is used along with the aggregates option and cannot be used independently.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	

Name	Type	Description
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.

Name	Type	Description
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.

Name	Type	Description
storage_service_level	string	Specifies the storage service level of the FlexGroup volume on which the bucket should be created. Valid values are "value", "performance" or "extreme".
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning a FlexGroup. Only mirrored aggregates are used if this parameter is set to "true" and only unmirrored aggregates are used if this parameter is set to "false". The default value is "true" for a MetroCluster configuration and is "false" for a non-MetroCluster configuration.
uuid	string	Specifies the unique identifier of the bucket.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Example request

```
{
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "constituents_per_aggregate": 4,
  "cors": {
    "rules": [
      {
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "lifecycle_management": {
    "rules": [
      {
        "bucket_name": "bucket1",
        "expiration": {
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "name": "string",
        "object_filter": {
```

```
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
    ]
  },
  "logical_used_size": 0,
  "name": "bucket1",
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
```

```
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
      }
    ]
  },
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "retention": {
    "default_period": "P10Y",
    "mode": "governance"
```

```
  },
  "role": "string",
  "size": 1677721600,
  "snapshot_policy": {
    "name": "default-1weekly",
    "uuid": "3675af31-431c-12fa-114a-20675afebc12"
  },
  "storage_service_level": "value",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "s3",
  "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
  "versioning_state": "enabled",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405777 +	"Failed to create bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason of failure}. ";
92405785 +	"Bucket name "{bucket name}" contains invalid characters or invalid character combinations. Valid characters for a bucket name are 0-9, a-z, ".", and "-". Invalid character combinations are ".-", "-.", and "..". ";
92405786 +	"Bucket name "{bucket name}" is not valid. Bucket names must have between 3 and 63 characters. ";
92405811 +	"Failed to create bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405812 +	"Failed to create the object store volume. Reason: {Reason for failure}.";
92405819 +	"Cannot provision an object store server volume for bucket "{bucket name}" in SVM "{svm.name}" on the following aggregates because they are SnapLock aggregates: {List of aggregates.name}.";
92405820 +	"Failed to check whether the aggregate "{aggregates.name}" is a FabricPool. Reason: {Reason for failure}.";
92405821 +	"Cannot provision an object store server volume for bucket "{bucket name}" in SVM "{svm.name}" on the following aggregates because they are FabricPool: {List of aggregates.name}.";
92405827 +	"Internal Error. Unable to generate object store volume name.";
92405857 +	"One or more aggregates must be specified if "constituents_per_aggregate" is specified.";
92405858 +	"Failed to "create" the "bucket" because the operation is only supported on data SVMs.";
92405859 +	"The specified "aggregates.uuid" "{aggregates.uuid}" does not exist.";

Error code	Message
92405860 +	"The specified "aggregates.name" "{aggregates.name}" and "aggregates.uuid" "{aggregates.uuid}" refer to different aggregates.";
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92405863 +	"An error occurs when creating an access policy. The reason for failure is detailed in the error message.";
92405863 +	"Failed to create lifecycle management rules for bucket "s3bucket1". Reason: {Reason of failure}. ";
92405891 +	The resources specified in the access policy are not valid. Valid ways to specify a resource are *, <bucket-name>, <bucket-name>/…/…. Valid characters for a resource are 0-9, A-Z, a-z, _, +, comma, ;, :, =, ., &, @,?, (,), single quote, *, !, - and $.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.

Name	Type	Description
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The

user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	

Name	Type	Description
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

Name	Type	Description
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
aggregates	array[aggregates]	A list of aggregates for FlexGroup volume constituents where the bucket is hosted. If this option is not specified, the bucket is auto-provisioned as a FlexGroup volume.
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
constituents_per_aggregate	integer	Specifies the number of constituents or FlexVol volumes per aggregate. A FlexGroup volume consisting of all such constituents across all specified aggregates is created. This option is used along with the aggregates option and cannot be used independently.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
storage_service_level	string	Specifies the storage service level of the FlexGroup volume on which the bucket should be created. Valid values are "value", "performance" or "extreme".
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".

Name	Type	Description
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning a FlexGroup. Only mirrored aggregates are used if this parameter is set to "true" and only unmirrored aggregates are used if this parameter is set to "false". The default value is "true" for a MetroCluster configuration and is "false" for a non-MetroCluster configuration.
uuid	string	Specifies the unique identifier of the bucket.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the S3 bucket configuration for an SVM

DELETE `/protocols/s3/buckets/{svm.uuid}/{uuid}`

Introduced In: 9.8

Deletes the S3 bucket configuration of an SVM. An access policy is also deleted on an S3 bucket "delete" command.

Related ONTAP commands

- `vserver object-store-server bucket delete`
- `vserver object-store-server bucket policy statement delete`
- `vserver object-store-server bucket policy-statement-condition delete`
- `vserver object-store-server bucket lifecycle-management-rule delete`
- `vserver object-store-server bucket cors-rule delete`

Learn more

- DOC /protocols/s3/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405811 +	"Failed to delete bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405858 +	"Failed to "delete" the "bucket" because the operation is only supported on data SVMs.";
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92405779 +	"Failed to remove bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason for failure}. ";
92405813 +	"Failed to delete the object store volume. Reason: {Reason for failure}.";
92405864 +	"An error occurred when deleting an access policy. The reason for failure is detailed in the error message.";

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the S3 bucket configuration for an SVM

GET `/protocols/s3/buckets/{svm.uuid}/{uuid}`

Introduced In: 9.8

Retrieves the S3 bucket configuration of an SVM. Note that in order to retrieve S3 bucket policy conditions, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket show`
- `vserver object-store-server bucket policy statement show`
- `vserver object-store-server bucket policy-statement-condition show`
- `vserver object-store-server bucket lifecycle-management-rule show`
- `vserver object-store-server bucket cors-rule show`

Learn more

- DOC /protocols/s3/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Example response


```
{
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "cors": {
    "rules": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "lifecycle_management": {
    "rules": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "abort_incomplete_multipart_upload": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
```

```
            }
          }
        },
        "bucket_name": "bucket1",
        "expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "name": "string",
        "non_current_version_expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        },
        "object_filter": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
```

```
    ]
  },
  "logical_used_size": 0,
  "name": "bucket1",
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
```

```
      }
    ]
  },
  "qos_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "retention": {
    "default_period": "P10Y",
    "mode": "governance"
  },
  "role": "string",
  "size": 1677721600,
  "snapshot_policy": {
    "name": "default-1weekly",
    "uuid": "3675af31-431c-12fa-114a-20675afebc12"
  },
  "svm": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "s3",
  "use_mirrored_aggregates": true,
  "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
  "versioning_state": "enabled",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.

Name	Type	Description
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	
prefix	string	A prefix that is matched against object-names within a bucket.

Name	Type	Description
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.

Name	Type	Description
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the S3 bucket configuration for an SVM

PATCH `/protocols/s3/buckets/{svm.uuid}/{uuid}`

Introduced In: 9.8

Updates the S3 bucket configuration of an SVM.

Important notes

- The following fields can be modified for a bucket:
  - `comment` - Any information related to the bucket.
  - `size` - Bucket size.
  - `policy` - An access policy for resources (buckets and objects) that defines their permissions. New policies are created after existing policies are deleted. To retain any of the existing policy statements, you need to specify those statements again. Also, policy conditions can be specified as part of a bucket policy.
  - `qos_policy` - A QoS policy for buckets.
  - `audit_event_selector` - Audit policy for buckets. None can be specified for both access and permission to remove an audit event selector.
  - `versioning-state` - Versioning state of the buckets.
  - `nas_path` - NAS path to which the bucket corresponds to.
  - `retention.default_period` - Specifies the duration of default-retention applicable for objects on the object store bucket.
  - `cors` - Specifying CORS rules enables the bucket to service the cross-origin requests. Note that the new CORS configuration specified will replace the existing one. If you need to retain any of the existing CORS rules, specify those rules again as part of the new CORS rules. To remove all the existing rules, specify an empty CORS configuration as input.
  - `snapshot_policy` - Snapshot policy for the bucket.

Related ONTAP commands

- `vserver object-store-server bucket modify`
- `vserver object-store-server bucket policy statement modify`
- `vserver object-store-server bucket policy-statement-condition modify`

- `vserver object-store-server bucket cors-rule create`
- `vserver object-store-server bucket cors-rule delete`

Learn more

- DOC /protocols/s3/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.

Name	Type	Description
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.

Name	Type	Description
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Example request

```
{
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "cors": {
    "rules": [
      {
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "is_nas_path_mutable": true,
  "logical_used_size": 0,
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
```

```
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
      }
    ]
  },
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
```

```
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "min_throughput_iops": 2000,
      "min_throughput_mbps": 500,
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "retention": {
      "default_period": "P10Y"
    },
    "role": "string",
    "size": 1677721600,
    "snapshot_policy": {
      "name": "default-1weekly",
      "uuid": "3675af31-431c-12fa-114a-20675afebc12"
    },
    "type": "s3",
    "use_mirrored_aggregates": true,
    "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
    "versioning_state": "enabled",
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405778 +	"Failed to modify bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason for failure}. ";
92405846 +	"Failed to modify the object store volume. Reason: {Reason for failure}.";
92405811 +	"Failed to modify bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405858 +	"Failed to "modify" the "bucket" because the operation is only supported on data SVMs.";
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92405863 +	"An error occurs when creating an access policy. The reason for failure is detailed in the error message.";
92405864 +	"An error occurs when deleting an access policy. The reason for failure is detailed in the error message.";
92405891 +	The resources specified in the access policy are not valid. Valid ways to specify a resource are *, <bucket-name>, <bucket-name>/…/…. Valid characters for a resource are 0-9, A-Z, a-z, _, +, comma, ;, :, =, ., &, @,?, (,), single quote, *, !, - and $.
92405894 +	"Statements, principals and resources list can have a maximum of 10 entries.";

Error code	Message
92405897 +	The principals specified in the access policy are not in the correct format. User name must be in between 1 and 64 characters. Valid characters for a user name are 0-9, A-Z, a-z, _, +, =, comma, ., @, and - .
92405898 +	"The SID specified in the access policy is not valid. Valid characters for a SID are 0-9, A-Z and a-z.";
92406014 +	"Failed to modify event selector for bucket "{bucket name}". If the value of either access or permission is set to none, they both must be set to none.";
92733458 +	"[Job job number] Job failed: Failed to modify bucket "s3bucket1" for SVM "vs1". Reason: {Reason for failure}. ";
8454236 +	"Could not assign qtree "qtree1" to QoS policy group "group1". Invalid QoS policy group specified "group1". The specified QoS policy group has a min-throughput value set, and the workload being assigned resides on a platform that does not support min-throughput or the cluster is in a mixed version state and the effective cluster version of ONTAP does not support min-throughput on this platform.";
8454323 +	"Policy group with UUID "23bwegew-8eqg-121r-bjad-0050e628wq732" does not exist."
92406230 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be greater than the maximum lock retention period set in the object store server for SVM "{SVM}". Check the maximum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";
92406236 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be less than the minimum lock retention period set in the object store server for SVM "{SVM}". Check the minimum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";
92406217 +	"The specified "allowed_headers" is not valid because it contains more than one wild card ("*") character.";
92406224 +	"A Cross-Origin Resource Sharing (CORS) rule must have an origin and HTTP method specified.";
92406222 +	"Cannot specify Cross-Origin Resource Sharing (CORS) configuration for object store bucket "{bucket}" on SVM "{SVM}". Specifying such configuration is supported on object store volumes created in ONTAP 9.8 or later releases only.";
92406211 +	"The specified method "DONE" is not valid. Valid methods are GET, PUT, DELETE, HEAD, and POST.";

Error code	Message
92405863 +	"Failed to create CORS rules for bucket "bb1". Reason: "Field "index" cannot be specified for this operation.". Resolve all the issues and retry the operation.";
92406228 +	"Cannot exceed the maximum limit of 100 Cross-Origin Resource Sharing (CORS) rules per S3 bucket "{bucket}" in SVM "{SVM}".";;

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.

Name	Type	Description
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage protocols S3 services

Protocols S3 services endpoint overview

Overview

An S3 server is an object store server that is compatible with the Amazon S3 protocol. In the initial version, only a subset of the protocol features necessary to support Fabric Pool capacity tier usecases are implemented. S3 server allows you to store objects in ONTAP using Amazon S3 protocol. This feature can be used as a target object store server for ONTAP FabricPools.

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Retrieving all of the S3 configurations

```
# The API:
/api/protocols/s3/services

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/s3/services?fields=*&return_records=true&return_timeout=
15" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "cf90b8f2-8071-11e9-8190-0050568eae21",
      "name": "vs2"
    },
    "name": "vs1",
    "comment": "S3 server",
    "enabled": false,
    "max_lock_retention_period": "none",
    "min_lock_retention_period": "none"
  },
  {
    "svm": {
      "uuid": "d7f1219c-7f8e-11e9-9124-0050568eae21",
      "name": "vs1"
    },
    "name": "Server-1",
    "comment": "S3 server",
```

```
    "enabled": true,
    "max_lock_retention_period": "none",
    "min_lock_retention_period": "none",
    "buckets": [
      {
        "uuid": "e08665af-8114-11e9-8190-0050568eae21",
        "name": "bucket-1",
        "volume": {
          "name": "fg_oss_1559026220",
          "uuid": "de146bff-8114-11e9-8190-0050568eae21"
        },
        "size": 209715200,
        "logical_used_size": 157286400,
        "encryption": {
          "enabled": false
        },
        "comment": "s3 bucket"
      },
      {
        "uuid": "fb1912ef-8114-11e9-8190-0050568eae21",
        "name": "bucket-2",
        "volume": {
          "name": "fg_oss_1559026269",
          "uuid": "f9b1cdd0-8114-11e9-8190-0050568eae21"
        },
        "size": 1048576000,
        "logical_used_size": 78643200,
        "encryption": {
          "enabled": false
        },
        "comment": "s3 bucket"
      }
    ],
    "users": [
      {
        "name": "user-1",
        "comment": "S3 user",
        "access_key": "FAKEACCESSKEYFAKEAC1"
      },
      {
        "name": "user-2",
        "comment": "",
        "access_key": "FAKEACCESSKEYFAKEAC2"
      }
    ]
  }
```

```
],
"num_records": 2
}
```

Retrieving all S3 configurations for a particular SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/24c2567a-f269-
11e8-8852-0050568e5298?fields=*" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "d7f1219c-7f8e-11e9-9124-0050568eae21",
  "name": "vs1"
},
"name": "Server-1",
"comment": "S3 server",
"enabled": true,
"max_lock_retention_period": "none",
"min_lock_retention_period": "none",
"buckets": [
  {
    "uuid": "e08665af-8114-11e9-8190-0050568eae21",
    "name": "bucket-1",
    "volume": {
      "name": "fg_oss_1559026220",
      "uuid": "de146bff-8114-11e9-8190-0050568eae21"
    },
    "size": 209715200,
    "logical_used_size": 157286400,
    "encryption": {
      "enabled": false
    },
    "comment": "s3 bucket",
    "policy": {
      "statements": [
        {
          "effect": "deny",
          "actions": [
            "*Object"
          ],
```

```
          "principals": [
            "mike"
          ],
          "resources": [
            "bucket-1/policy-docs/*",
            "bucket-1/confidential-*"
          ],
          "sid": "DenyAccessToGetPutDeleteObjectForMike"
        },
        {
          "effect": "allow",
          "actions": [
            "GetObject"
          ],
          "principals": [
            "*"
          ],
          "resources": [
            "bucket-1/readme"
          ],
          "sid": "AccessToGetObjectForAnonymousUser"
        }
      ]
    },
    "cors": {
      "rules": [
        {
          "id": "string",
          "allowed_origins": [
            "http://www.example.com"
          ],
          "allowed_methods": [
            "PUT",
            "DELETE"
          ],
          "allowed_headers": [
            "x-amz-request-id"
          ],
          "expose_headers": [
            "http://www.example.com"
          ],
          "max_age_seconds": 1024
        }
      ]
    }
  },
```

```
    {
      "uuid": "fb1912ef-8114-11e9-8190-0050568eae21",
      "name": "bucket-2",
      "volume": {
        "name": "fg_oss_1559026269",
        "uuid": "f9b1cdd0-8114-11e9-8190-0050568eae21"
      },
      "size": 1677721600,
      "logical_used_size": 1075838976,
      "encryption": {
        "enabled": false
      },
      "comment": "s3 bucket"
    }
  ],
  "users": [
    {
      "name": "user-1",
      "comment": "s3 user",
      "access_key": "FAKEACCESSKEYFAKEAC1"
    },
    {
      "name": "user-2",
      "comment": "",
      "access_key": "FAKEACCESSKEYFAKEAC2"
    }
  ]
  }
```


Creating an S3 server, users, and buckets configurations with required fields specified

```
# The API:
/api/protocols/s3/services

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"buckets\": [ { \"name\": \"bucket-1\" }, { \"name\": \"bucket-2\" } ],
\"enabled\": true, \"name\": \"Server-1\", \"svm\": { \"uuid\":
\"d49ef663-7f8e-11e9-9b2c-0050568e4594\" }, \"users\": [ { \"name\":
\"user-1\" }, { \"name\": \"user-2\" } ]}"

# The response:
HTTP/1.1 201 Created
Date: Fri, 31 May 2019 08:44:16 GMT
```

```
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/
Content-Length: 623
Content-Type: application/hal+json
{
"num_records": 1,
"records": [
  {
    "users": [
      {
        "name": "user-1",
        "access_key": "FAKEACCESSKEYFAKEAC1",
        "secret_key": "<secret_key_here>"
      },
      {
        "name": "user-2",
        "access_key": "FAKEACCESSKEYFAKEAC2",
        "secret_key": "<secret_key_here>"
      }
    ],
    "job": {
      "uuid": "f51675dd-820a-11e9-a762-0050568e4594",
      "_links": {
        "self": {
          "href": "/api/cluster/jobs/f51675dd-820a-11e9-a762-0050568e4594"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/"
      }
    }
  }
]
}
```

Creating an S3 server, users, and buckets configurations

```
# The API:
/api/protocols/s3/services

# The call:
```

```
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"buckets\": [ { \"aggregates\": [ { \"name\": \"aggr1\", \"uuid\":
\"1cd8a442-86d1-11e0-ae1c-123478563412\" } ],
\"constituents_per_aggregate\": 4, \"name\": \"bucket-1\", \"size\":
\"209715200\",  \"policy\": { \"statements\": [ { \"actions\": [ \"*\" ],
\"conditions\": [ { \"operator\": \"ip_address\", \"source_ips\": [
\"1.1.1.1/23\", \"1.2.2.2/20\" ] } ], \"effect\": \"allow\",
\"resources\": [ \"bucket-1\", \"bucket-1*\" ], \"sid\":
\"fullAccessForAllPrincipalsToBucket\"} ] } }, { \"aggregates\": [ {
\"name\": \"aggr1\", \"uuid\": \"1cd8a442-86d1-11e0-ae1c-123478563412\" },
{ \"name\": \"aggr2\", \"uuid\": \"982fc4d0-d1a2-4da4-9c47-5b433f24757d\"}
], \"constituents_per_aggregate\": 4, \"name\": \"bucket-2\" } ],
\"enabled\": true, \"name\": \"Server-1\", \"max_lock_retention_period\":
\"P41Y\", \"max_lock_retention_period\": \"P1Y\", \"svm\": { \"name\":
\"vs1\", \"uuid\": \"d49ef663-7f8e-11e9-9b2c-0050568e4594\" }, \"users\":
[ { \"name\": \"user-1\" }, { \"name\": \"user-2\" } ]}"



# The response:
HTTP/1.1 201 Created
Date: Fri, 31 May 2019 08:44:16 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/
Content-Length: 623
Content-Type: application/hal+json
{
"num_records": 1,
"records": [
  {
    "users": [
      {
        "name": "user-1",
        "access_key": "FAKEACCESSKEYFAKEAC1",
        "secret_key": "<secret_key_here>"
      },
      {
        "name": "user-2",
        "access_key": "FAKEACCESSKEYFAKEAC2",
        "secret_key": "<secret_key_here>"
      }
    ],
```

```
    "job": {
      "uuid": "f51675dd-820a-11e9-a762-0050568e4594",
      "_links": {
        "self": {
          "href": "/api/cluster/jobs/f51675dd-820a-11e9-a762-0050568e4594"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/"
      }
    }
  }
]
}
```


Creating an S3 server configuration

```
# The API:
/api/protocols/s3/services

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"comment\":
\"S3 server\", \"enabled\": true, \"name\": \"Server-1\", \"svm\": {
\"name\": \"vs1\", \"uuid\": \"db2ec036-8375-11e9-99e1-0050568e3ed9\" } }"
```

Disable s3 server for the specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/03ce5c36-f269-
11e8-8852-0050568e5298" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"enabled\": false }"
```

Deleting the S3 server for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/a425f10b-ad3b-
11e9-b559-0050568e8222?delete_all=false" -H  "accept: application/json"
HTTP/1.1 200 OK
Date: Wed, 14 Aug 2019 07:04:24 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 132
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "job": {
      "uuid": "bf74ba50-be61-11e9-bea8-0050568e8222"
    }
  }
]
}
```

Deleting all of the S3 server configuration for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/03ce5c36-f269-
11e8-8852-0050568e5298?delete_all=true" -H "accept: application/json"

# The response:
HTTP/1.1 202 Accepted
Date: Sat, 01 Jun 2019 15:46:39 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "71eaaf02-8484-11e9-91f7-0050568ebc5f",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/71eaaf02-8484-11e9-91f7-0050568ebc5f"
    }
  }
}
}
```

Retrieve the S3 server configuration for all SVMs

GET `/protocols/s3/services`

Introduced In: 9.7

Retrieves the S3 server configuration for all SVMs. Note that in order to retrieve S3 bucket policy conditions, 'fields' option should be set to '**'.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver object-store-server show`

Learn more

- DOC /protocols/s3/services

Parameters

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.8
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.8
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.8
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
users.key_expiry_time	string	query	False	Filter by users.key_expiry_time • Introduced in: 9.14

Name	Type	In	Required	Description
users.key_time_to_live	string	query	False	Filter by users.key_time_to_live • Introduced in: 9.14
users.comment	string	query	False	Filter by users.comment • maxLength: 256 • minLength: 0
users.name	string	query	False	Filter by users.name • maxLength: 64 • minLength: 1
users.access_key	string	query	False	Filter by users.access_key
users.svm.name	string	query	False	Filter by users.svm.name
users.svm.uuid	string	query	False	Filter by users.svm.uuid
default_unix_user	string	query	False	Filter by default_unix_user • Introduced in: 9.12
secure_port	integer	query	False	Filter by secure_port • Introduced in: 9.8 • Max value: 65535 • Min value: 1
name	string	query	False	Filter by name • maxLength: 253 • minLength: 3

Name	Type	In	Required	Description
certificate.uuid	string	query	False	Filter by certificate.uuid • Introduced in: 9.8
certificate.name	string	query	False	Filter by certificate.name • Introduced in: 9.8
port	integer	query	False	Filter by port • Introduced in: 9.8 • Max value: 65535 • Min value: 1
min_lock_retention_period	string	query	False	Filter by min_lock_retention_period • Introduced in: 9.16
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
is_http_enabled	boolean	query	False	Filter by is_http_enabled • Introduced in: 9.8
max_key_time_to_live	string	query	False	Filter by max_key_time_to_live • Introduced in: 9.15

Name	Type	In	Required	Description
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
max_lock_retention_period	string	query	False	Filter by max_lock_retention_period • Introduced in: 9.16
buckets.nas_path	string	query	False	Filter by buckets.nas_path • Introduced in: 9.12
buckets.uuid	string	query	False	Filter by buckets.uuid
buckets.is_consistent_etag	boolean	query	False	Filter by buckets.is_consistent_etag • Introduced in: 9.17
buckets.type	string	query	False	Filter by buckets.type • Introduced in: 9.12
buckets.svm.name	string	query	False	Filter by buckets.svm.name
buckets.svm.uuid	string	query	False	Filter by buckets.svm.uuid
buckets.policy.statements.resources	string	query	False	Filter by buckets.policy.statements.resources • Introduced in: 9.8

Name	Type	In	Required	Description
buckets.policy.statements.sid	string	query	False	Filter by buckets.policy.statements.sid • Introduced in: 9.8 • maxLength: 256 • minLength: 0
buckets.policy.statements.effect	string	query	False	Filter by buckets.policy.statements.effect • Introduced in: 9.8
buckets.policy.statements.actions	string	query	False	Filter by buckets.policy.statements.actions • Introduced in: 9.8
buckets.policy.statements.conditions.prefixes	string	query	False	Filter by buckets.policy.statements.conditions.prefixes • Introduced in: 9.8
buckets.policy.statements.conditions.max_keys	integer	query	False	Filter by buckets.policy.statements.conditions.max_keys • Introduced in: 9.8
buckets.policy.statements.conditions.operator	string	query	False	Filter by buckets.policy.statements.conditions.operator • Introduced in: 9.8

Name	Type	In	Required	Description
buckets.policy.statements.conditions.source_ips	string	query	False	Filter by buckets.policy.statements.conditions.source_ips • Introduced in: 9.8
buckets.policy.statements.conditions.usernames	string	query	False	Filter by buckets.policy.statements.conditions.usernames • Introduced in: 9.8
buckets.policy.statements.conditions.delimiters	string	query	False	Filter by buckets.policy.statements.conditions.delimiters • Introduced in: 9.8
buckets.policy.statements.principals	string	query	False	Filter by buckets.policy.statements.principals • Introduced in: 9.8
buckets.protection_status.destination.is_external_cloud	boolean	query	False	Filter by buckets.protection_status.destination.is_external_cloud • Introduced in: 9.12
buckets.protection_status.destination.is_ontap	boolean	query	False	Filter by buckets.protection_status.destination.is_ontap • Introduced in: 9.10

Name	Type	In	Required	Description
buckets.protection_status.destination.is_cloud	boolean	query	False	Filter by buckets.protection_status.destination.is_cloud • Introduced in: 9.10
buckets.protection_status.is_protected	boolean	query	False	Filter by buckets.protection_status.is_protected • Introduced in: 9.10
buckets.is_nas_path_mutable	boolean	query	False	Filter by buckets.is_nas_path_mutable • Introduced in: 9.17
buckets.snapshot_policy.name	string	query	False	Filter by buckets.snapshot_policy.name • Introduced in: 9.16
buckets.snapshot_policy.uuid	string	query	False	Filter by buckets.snapshot_policy.uuid • Introduced in: 9.16
buckets.name	string	query	False	Filter by buckets.name • maxLength: 63 • minLength: 3
buckets.versioning_state	string	query	False	Filter by buckets.versioning_state • Introduced in: 9.11

Name	Type	In	Required	Description
buckets.qos_policy.uuid	string	query	False	Filter by buckets.qos_policy.uuid • Introduced in: 9.8
buckets.qos_policy.min_throughput_iops	integer	query	False	Filter by buckets.qos_policy.min_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0
buckets.qos_policy.min_throughput_mbps	integer	query	False	Filter by buckets.qos_policy.min_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
buckets.qos_policy.max_throughput	string	query	False	Filter by buckets.qos_policy.max_throughput • Introduced in: 9.17
buckets.qos_policy.min_throughput	string	query	False	Filter by buckets.qos_policy.min_throughput • Introduced in: 9.17

Name	Type	In	Required	Description
buckets.qos_policy.max_throughput_iops	integer	query	False	Filter by buckets.qos_policy.max_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0
buckets.qos_policy.max_throughput_mbps	integer	query	False	Filter by buckets.qos_policy.max_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
buckets.qos_policy.name	string	query	False	Filter by buckets.qos_policy.name • Introduced in: 9.8
buckets.lifecycle_management.rules.expiration.object_expiry_date	string	query	False	Filter by buckets.lifecycle_management.rules.expiration.object_expiry_date • Introduced in: 9.13
buckets.lifecycle_management.rules.expiration.object_age_days	integer	query	False	Filter by buckets.lifecycle_management.rules.expiration.object_age_days • Introduced in: 9.13

Name	Type	In	Required	Description
buckets.lifecycle_management.rules.expiration.expired_object_delete_marker	boolean	query	False	Filter by buckets.lifecycle_management.rules.expiration.expired_object_delete_marker • Introduced in: 9.13
buckets.lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days	integer	query	False	Filter by buckets.lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days • Introduced in: 9.13
buckets.lifecycle_management.rules.non_current_version_expiration.non_current_days	integer	query	False	Filter by buckets.lifecycle_management.rules.non_current_version_expiration.non_current_days • Introduced in: 9.13
buckets.lifecycle_management.rules.non_current_version_expiration.new_non_current_versions	integer	query	False	Filter by buckets.lifecycle_management.rules.non_current_version_expiration.new_non_current_versions • Introduced in: 9.13
buckets.lifecycle_management.rules.name	string	query	False	Filter by buckets.lifecycle_management.rules.name • Introduced in: 9.13 • maxLength: 256 • minLength: 0

Name	Type	In	Required	Description
buckets.lifecycle_management.rules.object_filter.tags	string	query	False	Filter by buckets.lifecycle_management.rules.object_filter.tags • Introduced in: 9.13
buckets.lifecycle_management.rules.object_filter.size_less_than	integer	query	False	Filter by buckets.lifecycle_management.rules.object_filter.size_less_than • Introduced in: 9.13
buckets.lifecycle_management.rules.object_filter.size_greater_than	integer	query	False	Filter by buckets.lifecycle_management.rules.object_filter.size_greater_than • Introduced in: 9.13
buckets.lifecycle_management.rules.object_filter.prefix	string	query	False	Filter by buckets.lifecycle_management.rules.object_filter.prefix • Introduced in: 9.13
buckets.lifecycle_management.rules.uuid	string	query	False	Filter by buckets.lifecycle_management.rules.uuid • Introduced in: 9.14

Name	Type	In	Required	Description
buckets.lifecycle_management.rules.bucket_name	string	query	False	Filter by buckets.lifecycle_management.rules.bucket_name • Introduced in: 9.14 • maxLength: 63 • minLength: 3
buckets.lifecycle_management.rules.svm.name	string	query	False	Filter by buckets.lifecycle_management.rules.svm.name • Introduced in: 9.14
buckets.lifecycle_management.rules.svm.uuid	string	query	False	Filter by buckets.lifecycle_management.rules.svm.uuid • Introduced in: 9.14
buckets.lifecycle_management.rules.enabled	boolean	query	False	Filter by buckets.lifecycle_management.rules.enabled • Introduced in: 9.13
buckets.encryption.enabled	boolean	query	False	Filter by buckets.encryption.enabled
buckets.retention.default_period	string	query	False	Filter by buckets.retention.default_period • Introduced in: 9.14

Name	Type	In	Required	Description
buckets.retention.mode	string	query	False	Filter by buckets.retention.mode • Introduced in: 9.14
buckets.audit_event_selector.access	string	query	False	Filter by buckets.audit_event_selector.access • Introduced in: 9.10
buckets.audit_event_selector.permission	string	query	False	Filter by buckets.audit_event_selector.permission • Introduced in: 9.10
buckets.volume.uuid	string	query	False	Filter by buckets.volume.uuid
buckets.volume.name	string	query	False	Filter by buckets.volume.name
buckets.role	string	query	False	Filter by buckets.role • Introduced in: 9.10
buckets.allowed	boolean	query	False	Filter by buckets.allowed • Introduced in: 9.12
buckets.cors.rules.allowed_methods	string	query	False	Filter by buckets.cors.rules.allowed_methods • Introduced in: 9.16

Name	Type	In	Required	Description
buckets.cors.rules.id	string	query	False	Filter by buckets.cors.rules.id • Introduced in: 9.16 • maxLength: 256 • minLength: 0
buckets.cors.rules.expose_headers	string	query	False	Filter by buckets.cors.rules.expose_headers • Introduced in: 9.16
buckets.cors.rules.allowed_origins	string	query	False	Filter by buckets.cors.rules.allowed_origins • Introduced in: 9.16
buckets.cors.rules.allowed_headers	string	query	False	Filter by buckets.cors.rules.allowed_headers • Introduced in: 9.16
buckets.cors.rules.max_age_seconds	integer	query	False	Filter by buckets.cors.rules.max_age_seconds • Introduced in: 9.16
buckets.comment	string	query	False	Filter by buckets.comment • maxLength: 256 • minLength: 0
buckets.logical_used_size	integer	query	False	Filter by buckets.logical_used_size

Name	Type	In	Required	Description
buckets.size	integer	query	False	Filter by buckets.size • Max value: 62672162783232000 • Min value: 199229440
default_win_user	string	query	False	Filter by default_win_user • Introduced in: 9.12
is_https_enabled	boolean	query	False	Filter by is_https_enabled • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.8
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.8
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "buckets": [
        {
          "audit_event_selector": {
            "access": "string",
            "permission": "string"
          },
          "comment": "S3 bucket.",
          "cors": {
            "rules": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "allowed_headers": [
                  "x-amz-request-id"
                ],
                "allowed_methods": [
                  "PUT",
                  "DELETE"
                ],
                "allowed_origins": [
                  "http://www.example.com"
                ],
                "expose_headers": [
                  "x-amz-date"
```

```
                ],
                "id": "string",
                "max_age_seconds": 1024
              }
            ]
          },
          "lifecycle_management": {
            "rules": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "abort_incomplete_multipart_upload": {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  }
                },
                "bucket_name": "bucket1",
                "expiration": {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "object_age_days": 100,
                  "object_expiry_date": "2039-09-22 20:00:00 -0400"
                },
                "name": "string",
                "non_current_version_expiration": {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  }
                },
                "object_filter": {
                  "_links": {
                    "self": {
                      "href": "/api/resourcelink"
                    }
                  },
                  "prefix": "/logs",
```

```
                "size_greater_than": 10240,
                "size_less_than": 10485760,
                "tags": [
                  "project1=projA",
                  "project2=projB"
                ]
              },
              "svm": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "svm1",
                "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
              },
              "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
            }
          ]
        },
        "logical_used_size": 0,
        "name": "bucket1",
        "nas_path": "/",
        "policy": {
          "statements": [
            {
              "actions": [
                "GetObject",
                "PutObject",
                "DeleteObject",
                "ListBucket"
              ],
              "conditions": [
                {
                  "delimiters": [
                    "/"
                  ],
                  "max_keys": [
                    1000
                  ],
                  "operator": "ip_address",
                  "prefixes": [
                    "pref"
                  ],
                  "source_ips": [
                    "1.1.1.1",
```

```
                "1.2.2.0/24"
              ],
              "usernames": [
                "user1"
              ]
            }
          ],
          "effect": "allow",
          "principals": [
            "user1",
            "group/grp1",
            "nasgroup/group1"
          ],
          "resources": [
            "bucket1",
            "bucket1/*"
          ],
          "sid": "FullAccessToUser1"
        }
      ]
    },
    "qos_policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "max_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
```

```
            ],
            "min_throughput_iops": 2000,
            "min_throughput_mbps": 500,
            "name": "performance",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "retention": {
            "default_period": "P10Y",
            "mode": "governance"
          },
          "role": "string",
          "size": 1677721600,
          "snapshot_policy": {
            "name": "default-1weekly",
            "uuid": "3675af31-431c-12fa-114a-20675afebc12"
          },
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          },
          "type": "s3",
          "use_mirrored_aggregates": true,
          "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
          "versioning_state": "enabled",
          "volume": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ],
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "comment": "S3 server",
      "default_unix_user": "string",
      "default_win_user": "string",
      "max_key_time_to_live": "PT6H3M",
      "max_lock_retention_period": "P10Y",
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "min_lock_retention_period": "P10Y",
      "name": "Server-1",
      "port": 80,
      "secure_port": 443,
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
```

```
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "users": [
        {
          "access_key": "HJAKU28M3SXTE2UXUACV",
          "comment": "S3 user",
          "key_expiry_time": "2023-12-31 19:00:00 -0500",
          "key_time_to_live": "PT6H3M",
          "name": "user-1",
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          }
        }
      ]
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.

Name	Type	Description
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.

Name	Type	Description
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.

Name	Type	Description
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

s3_service

Specifies the S3 server configuration.

Name	Type	Description
_links	self_link	
buckets	array[s3_bucket]	This field cannot be specified in a PATCH method.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.

Name	Type	Description
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[s3_user]	This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create S3 server, users, and buckets configurations

POST `/protocols/s3/services`

Introduced In: 9.7

Creates an S3 server, users, and buckets configurations.

Important notes

- Each SVM can have one S3 server configuration.
- One or more buckets and users can also be created using this end-point.
- If creating a user configuration fails, buckets are not created either and already created users are not saved.
- If creating a bucket configuration fails, all buckets already created are saved with no new buckets created.

Required properties

- `svm.uuid` - Existing SVM in which to create an S3 server configuration.

Recommended optional properties

- `enabled` - Specifies the state of the server created.
- `comment` - Any information related to the server created.

Default property values

- `comment` - ""
- `enabled` - *true*

Related ONTAP commands

- `vserver object-store-server create`
- `vserver object-store-server bucket create`
- `vserver object-store-server bucket policy statement create`
- `vserver object-store-server bucket policy-statement-condition create`
- `vserver object-store-server bucket cors-rule create`
- `vserver object-store-server user create`

Learn more

- DOC /protocols/s3/services

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
buckets	array[s3_bucket]	This field cannot be specified in a PATCH method.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.

Name	Type	Description
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>

Name	Type	Description
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[s3_user]	This field cannot be specified in a PATCH method.

Example request

```
{
  "buckets": [
    {
      "aggregates": [
        {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "audit_event_selector": {
        "access": "string",
        "permission": "string"
      },
      "comment": "S3 bucket.",
      "constituents_per_aggregate": 4,
      "cors": {
        "rules": [
          {
            "allowed_headers": [
              "x-amz-request-id"
            ],
            "allowed_methods": [
              "PUT",
              "DELETE"
            ],
            "allowed_origins": [
              "http://www.example.com"
            ],
            "expose_headers": [
              "x-amz-date"
            ],
            "id": "string",
            "max_age_seconds": 1024
          }
        ]
      },
      "lifecycle_management": {
        "rules": [
          {
            "bucket_name": "bucket1",
            "expiration": {
              "object_age_days": 100,
              "object_expiry_date": "2039-09-22 20:00:00 -0400"
            },
```

```
            "name": "string",
            "object_filter": {
              "prefix": "/logs",
              "size_greater_than": 10240,
              "size_less_than": 10485760,
              "tags": [
                "project1=projA",
                "project2=projB"
              ]
            },
            "svm": {
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
          }
        ]
      },
      "logical_used_size": 0,
      "name": "bucket1",
      "nas_path": "/",
      "policy": {
        "statements": [
          {
            "actions": [
              "GetObject",
              "PutObject",
              "DeleteObject",
              "ListBucket"
            ],
            "conditions": [
              {
                "delimiters": [
                  "/"
                ],
                "max_keys": [
                  1000
                ],
                "operator": "ip_address",
                "prefixes": [
                  "pref"
                ],
                "source_ips": [
                  "1.1.1.1",
                  "1.2.2.0/24"
                ],
```

```
                "usernames": [
                  "user1"
                ]
              }
            ],
            "effect": "allow",
            "principals": [
              "user1",
              "group/grp1",
              "nasgroup/group1"
            ],
            "resources": [
              "bucket1",
              "bucket1/*"
            ],
            "sid": "FullAccessToUser1"
          }
        ]
      },
      "qos_policy": {
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "retention": {
```

```
        "default_period": "P10Y",
        "mode": "governance"
      },
      "role": "string",
      "size": 1677721600,
      "snapshot_policy": {
        "name": "default-1weekly",
        "uuid": "3675af31-431c-12fa-114a-20675afebc12"
      },
      "storage_service_level": "value",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "s3",
      "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
      "versioning_state": "enabled",
      "volume": {
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "comment": "S3 server",
  "default_unix_user": "string",
  "default_win_user": "string",
  "max_key_time_to_live": "PT6H3M",
  "max_lock_retention_period": "P10Y",
  "min_lock_retention_period": "P10Y",
  "name": "Server-1",
  "port": 80,
  "secure_port": 443,
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "access_key": "HJAKU28M3SXTE2UXUACV",
      "comment": "S3 user",
      "key_expiry_time": "2023-12-31 19:00:00 -0500",
      "key_time_to_live": "PT6H3M",
```

```
      "name": "user-1",
      "secret_key": "dummy_secret_key_1234_abcd_ldjf",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of Records
records	array[records]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "job": {
        "uuid": "string"
      },
      "users": [
        {
          "access_key": "HJAKU28M3SXTE2UXUACV",
          "key_expiry_time": "2023-12-31 19:00:00 -0500",
          "name": "user-1",
          "secret_key": "BcA_HX6If458llhnx3n1TCO3mg4roCXG0ddYf_cJ"
        }
      ]
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127 +	The cluster lacks a valid S3 license.
2621706 +	The specified "{svm.uuid}" and "{svm.name}" refer to different SVMs.
92405789 +	The specified object server name contains invalid characters or not a fully qualified domain name. Valid characters for an object store server name are 0-9, A-Z, a-z, ".", and "-".
92405790 +	Object store server names must have between 3 and 253 characters.
92405839 +	Creating an object store server requires an effective cluster version of data ONTAP 9.7.0 or later. Upgrade all the nodes to 9.7.0 or later and try the operation again.
92405853 +	Failed to create the object store server because Cloud Volumes ONTAP does not support object store servers.
92405863 +	An error occurs when creating an S3 user or bucket. The reason for failure is detailed in the error message. Follow the error codes specified for the user or bucket endpoints to see details for the failure.
92405863 +	Failed to create bucket "{bucket name}". Reason: "Failed to create bucket "{bucket name}" for SVM "{svm.name}". Reason: Bucket name "{bucket name}" contains invalid characters or invalid character combinations. Valid characters for a bucket name are 0-9, a-z, ".", and "-". Invalid character combinations are ".-", "-.", and "..". ". Resolve all the issues and retry the operation.

Error Code	Description
92405863 +	Failed to create bucket "{bucket name}". Reason: "Failed to create bucket "{bucket name}" for SVM "{svm.name}". Reason: Invalid QoS policy group specified "{qos policy}". The specified QoS policy group has a min-throughput value set, and the workload being assigned resides on a platform that does not support min-throughput or the cluster is in a mixed version state and the effective cluster version of ONTAP does not support min-throughput on this platform. Resolve all the issues and retry the operation.
92405863 +	Failed to create bucket "{bucket name}". Reason: "User(s) "{user name(s)}" specified in the principal list do not exist for SVM "{svm.name}". Use the "object-store-server user create" command to create a user.". Resolve all the issues and retry the operation.
92405863 +	Failed to create user "{user name}". Reason: "SVM "Cluster" is not a data SVM. Specify a data SVM.". Resolve all the issues and retry the operation.
92405884 +	An object store server can only be created on a data SVM. An object store server can also be created on a system SVM on a mixed platform cluster.
92405903 +	Failed to configure HTTPS on an object store server for SVM "{svm.name}". Reason: {Reason of failure}.
92405900 +	Certificate not found for SVM "{svm.name}".
92405917 +	The specified certificate name and UUID do not refer to the same certificate.
92406020 +	Only certificates of type "server" are supported.
92406044 +	Failed to set default UNIX user for SVM "{svm.name}". Reason: UNIX user can only be created on a Data SVM.
92406071 +	S3 protocol is not present in the allowed protocol list for SVM "{svm.name}".
92406196 +	The specified value for the "key_time_to_live" field cannot be greater than the maximum limit specified for the "max_key_time_to_live" field in the object store server.
92406197 +	Object store user "user-2" must have a non-zero value for the "key_time_to_live" field because the maximum limit specified for the "max_key_time_to_live" field in the object store server is not zero.

Error Code	Description
92406230 +	The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be greater than the maximum lock retention period set in the object store server for SVM "{SVM}". Check the maximum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.
92406231 +	One or more object store buckets exist with a default retention period greater than the "max_lock_retention_period" specified. Check the default retention period set for each bucket in the specified SVM and try the operation again.
92406236 +	The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be less than the minimum lock retention period set in the object store server for SVM "{SVM}". Check the minimum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.
92406237 +	One or more object store buckets exist with a default retention period less than the "min_lock_retention_period" specified. Check the default retention period set for each bucket in the specified SVM and try the operation again.
92406238 +	The value for the "min_lock_retention_period" parameter cannot be greater than the "max_lock_retention_period" parameter for the object store server for SVM "vs1".
92406217 +	The specified "-allowed-headers" in not valid because it contains more than one wild card ("__") character.;
92406224 +	A Cross-Origin Resource Sharing (CORS) rule must have an origin and HTTP method specified.;
92406211 +	The specified method "DONE" is not valid. Valid methods are GET, PUT, DELETE, HEAD, and POST.;
92405863 +	Failed to create CORS rules for bucket "bb1". Reason: "Field "index" cannot be specified for this operation.". Resolve all the issues and retry the operation.;
92406228 +	Cannot exceed the maximum limit of 100 Cross-Origin Resource Sharing (CORS) rules per S3 bucket "{bucket}" in SVM "{SVM}".;

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.

Name	Type	Description
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The

user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	

Name	Type	Description
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

Name	Type	Description
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
aggregates	array[aggregates]	A list of aggregates for FlexGroup volume constituents where the bucket is hosted. If this option is not specified, the bucket is auto-provisioned as a FlexGroup volume.
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
constituents_per_aggregate	integer	Specifies the number of constituents or FlexVol volumes per aggregate. A FlexGroup volume consisting of all such constituents across all specified aggregates is created. This option is used along with the aggregates option and cannot be used independently.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
storage_service_level	string	Specifies the storage service level of the FlexGroup volume on which the bucket should be created. Valid values are "value", "performance" or "extreme".
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".

Name	Type	Description
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning a FlexGroup. Only mirrored aggregates are used if this parameter is set to "true" and only unmirrored aggregates are used if this parameter is set to "false". The default value is "true" for a MetroCluster configuration and is "false" for a non-MetroCluster configuration.
uuid	string	Specifies the unique identifier of the bucket.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.

Name	Type	Description
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

s3_service

Specifies the S3 server configuration.

Name	Type	Description
buckets	array[s3_bucket]	This field cannot be specified in a PATCH method.

Name	Type	Description
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.

Name	Type	Description
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.

Name	Type	Description
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[s3_user]	This field cannot be specified in a PATCH method.

collection_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

s3_service_user_post_response

Name	Type	Description
access_key	string	Specifies the access key for the user.
key_expiry_time	string	Specifies the date and time after which the keys expire and are no longer valid.
name	string	The name of the user.
secret_key	string	Specifies the secret key for the user.

warning

Specifies a warning message sent from the S3 server during a POST or PATCH operation.

Name	Type	Description
code	integer	Warning code of the warning encountered.

Name	Type	Description
message	string	Details of the warning sent from the S3 server.

records

Name	Type	Description
job	job_link	
users	array[s3_service_user_post_response]	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the S3 server configuration for an SVM

DELETE `/protocols/s3/services/{svm.uuid}`

Introduced In: 9.7

Deletes the S3 server configuration of an SVM. If the 'delete_all' parameter is set to false, only the S3 server is deleted. Otherwise S3 users and buckets present on the SVM are also deleted. Note that only empty buckets can be deleted. This endpoint returns the S3 server delete job-uuid in response. To monitor the job status follow /api/cluster/jobs/<job-uuid>.</job-uuid>

Related ONTAP commands

- `vserver object-store-server delete`

Learn more

- DOC /protocols/s3/services

Parameters

Name	Type	In	Required	Description
delete_all	boolean	query	False	Delete S3 server and associated users and empty buckets. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405864	An error occurs when deleting an S3 user or bucket. The reason for failure is detailed in the error message. Follow the error codes specified for the user or bucket endpoints to see details for the failure.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the S3 server configuration for an SVM

GET `/protocols/s3/services/{svm.uuid}`

Introduced In: 9.7

Retrieves the S3 Server configuration of an SVM. Note that in order to retrieve S3 bucket policy conditions, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server show`

Learn more

- DOC /protocols/s3/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
buckets	array[s3_bucket]	This field cannot be specified in a PATCH method.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.

Name	Type	Description
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[s3_user]	This field cannot be specified in a PATCH method.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "buckets": [
    {
      "audit_event_selector": {
        "access": "string",
        "permission": "string"
      },
      "comment": "S3 bucket.",
      "cors": {
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "allowed_headers": [
              "x-amz-request-id"
            ],
            "allowed_methods": [
              "PUT",
              "DELETE"
            ],
            "allowed_origins": [
              "http://www.example.com"
            ],
            "expose_headers": [
              "x-amz-date"
            ],
            "id": "string",
            "max_age_seconds": 1024
          }
        ]
      },
      "lifecycle_management": {
        "rules": [
          {
            "_links": {
              "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "abort_incomplete_multipart_upload": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        },
        "bucket_name": "bucket1",
        "expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "name": "string",
        "non_current_version_expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        },
        "object_filter": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
```

```
                }
              },
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
          }
        ]
      },
      "logical_used_size": 0,
      "name": "bucket1",
      "nas_path": "/",
      "policy": {
        "statements": [
          {
            "actions": [
              "GetObject",
              "PutObject",
              "DeleteObject",
              "ListBucket"
            ],
            "conditions": [
              {
                "delimiters": [
                  "/"
                ],
                "max_keys": [
                  1000
                ],
                "operator": "ip_address",
                "prefixes": [
                  "pref"
                ],
                "source_ips": [
                  "1.1.1.1",
                  "1.2.2.0/24"
                ],
                "usernames": [
                  "user1"
                ]
              }
            ],
            "effect": "allow",
            "principals": [
              "user1",
              "group/grp1",
```

```
            "nasgroup/group1"
          ],
          "resources": [
            "bucket1",
            "bucket1/*"
          ],
          "sid": "FullAccessToUser1"
        }
      ]
    },
    "qos_policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "max_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "min_throughput_iops": 2000,
      "min_throughput_mbps": 500,
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "retention": {
      "default_period": "P10Y",
      "mode": "governance"
    },
    "role": "string",
```

```
      "size": 1677721600,
      "snapshot_policy": {
        "name": "default-1weekly",
        "uuid": "3675af31-431c-12fa-114a-20675afebc12"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "s3",
      "use_mirrored_aggregates": true,
      "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055",
      "versioning_state": "enabled",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "comment": "S3 server",
  "default_unix_user": "string",
  "default_win_user": "string",
  "max_key_time_to_live": "PT6H3M",
  "max_lock_retention_period": "P10Y",
  "metric": {
    "_links": {
      "self": {
```

```
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "min_lock_retention_period": "P10Y",
  "name": "Server-1",
  "port": 80,
  "secure_port": 443,
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
```

```
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "access_key": "HJAKU28M3SXTE2UXUACV",
      "comment": "S3 user",
      "key_expiry_time": "2023-12-31 19:00:00 -0500",
      "key_time_to_live": "PT6H3M",
      "name": "user-1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.

Name	Type	Description
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.

Name	Type	Description
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the S3 server configuration for an SVM

PATCH `/protocols/s3/services/{svm.uuid}`

Introduced In: 9.7

Updates the S3 Server configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server modify`

Learn more

- DOC /protocols/s3/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.

Name	Type	Description
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>

Name	Type	Description
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.

Example request

```
{
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "comment": "S3 server",
  "default_unix_user": "string",
  "default_win_user": "string",
  "max_key_time_to_live": "PT6H3M",
  "max_lock_retention_period": "P10Y",
  "min_lock_retention_period": "P10Y",
  "name": "Server-1",
  "port": 80,
  "secure_port": 443
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405789 +	The name "{object server name}" is not valid. A valid object server name must be a fully qualified domain name.
92405790 +	Object store server name is not valid. Object store server names must have between 3 and 253 characters.
92405900 +	Certificate not found for SVM "{svm.name}".
92405917 +	The specified certificate name and UUID do not refer to the same certificate.
92406020 +	Only certificates of type "server" are supported.
92406153 +	Set the enabled field of the server to "down" before modifying following fields: {field name}
92406231 +	One or more object store buckets exist with a default retention period greater than the "max_lock_retention_period" specified. Check the default retention period set for each bucket in the specified SVM and try the operation again.
92406237 +	One or more object store buckets exist with a default retention period less than the "min_lock_retention_period" specified. Check the default retention period set for each bucket in the specified SVM and try the operation again.
92406238 +	The value for the "min_lock_retention_period" parameter cannot be greater than the "max_lock_retention_period" parameter for the object store server for SVM "vs1".

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Audit event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be specified in a POST method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud. This field cannot be specified using a POST method.

Name	Type	Description
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers. This field cannot be specified using a POST method.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be specified using a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service. This field cannot be specified in a POST method.
audit_event_selector	audit_event_selector	Audit event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be specified using a POST or PATCH method.
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be specified using a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
type	string	Specifies the bucket type. Valid values are "s3"and "nas".
uuid	string	Specifies the unique identifier of the bucket.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

s3_service

Specifies the S3 server configuration.

Name	Type	Description
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
comment	string	Can contain any additional information about the server being created or modified.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether the S3 server being created or modified should be up or down.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server being created or modified. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server being created or modified. By default, HTTPS is enabled on the S3 server.
max_key_time_to_live	string	Indicates the maximum time period that an S3 user can specify for the 'key_time_to_live' property. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If no value is specified for this property or the value specified is '0' seconds, then a user can specify any valid value.

Name	Type	Description
max_lock_retention_period	string	Specifies the maximum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
min_lock_retention_period	string	Specifies the minimum value that can be set as the retention period for an object in a bucket with locking enabled. The value for this property can be in years or days, not both. The value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years.</num></num>
name	string	Specifies the name of the S3 server. A server name can contain 3 to 253 characters using only the following combination of characters':' 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80. Valid values range from 1 to 65535.

Name	Type	Description
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443. Valid values range from 1 to 65535.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 service bucket configuration

Protocols S3 services svm.uuid buckets endpoint overview

Overview

An S3 bucket is a container of objects. Each bucket defines an object namespace. S3 server requests specify objects using a bucket-name and object-name pair. An object consists of data, along with optional metadata and access controls, accessible via a name. An object resides within a bucket. There can be more than one bucket in an S3 server. Buckets which are created for the server are associated with an S3 user that is created on the S3 server.
An access policy is an object that when associated with a resource, defines their permissions. Buckets and objects are defined as resources. By default, only the "root" user can access these resources. Access policies are used to manage access to these resources by enabling ONTAP admin to provide "grants" to allow other users to perform operations on the buckets.

Examples

Retrieving all fields for all S3 buckets of an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/buckets?fields=**&return_records=true" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
      "name": "vs1"
    },
    "uuid": "527812ab-7c6d-11e9-97e8-0050568ea123",
    "name": "bucket-2",
    "volume": {
      "name": "fg_oss_1558514455",
      "uuid": "51276f5f-7c6d-11e9-97e8-0050568ea123"
    },
    "size": 209715200,
    "logical_used_size": 157286400,
    "encryption": {
      "enabled": false
    },
    "comment": "S3 bucket.",
    "qos_policy": {
      "min_throughput_iops": 0,
      "min_throughput_mbps": 0,
      "max_throughput_iops": 1000,
      "max_throughput_mbps": 50,
      "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
      "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
    },
    "audit_event_selector": {
      "access":"all",
      "permission":"all"
    },
    "versioning-state": "disabled",
    "snapshot-policy": {
      "name": "default-1weekly",
      "uuid": "f9c5f090-4ac8-11ef-ba24-005056a7ceb6"
```

```
      },
    },
    {
      "svm": {
        "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
        "name": "vs1"
      },
      "uuid": "a8234aec-7e06-11e9-97e8-0050568ea123",
      "name": "bucket-1",
      "volume": {
        "name": "fg_oss_1558690256",
        "uuid": "a36a1ea7-7e06-11e9-97e8-0050568ea123"
      },
      "size": 1677721600,
      "logical_used_size": 0,
      "encryption": {
        "enabled": false
      },
      "comment": "bucket1",
      "qos_policy": {
        "min_throughput_iops": 0,
        "min_throughput_mbps": 0,
        "max_throughput_iops": 1000,
        "max_throughput_mbps": 50,
        "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
        "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
      },
      "policy": {
        "statements": [
          {
            "effect": "allow",
            "actions": [
              "*"
            ],
            "principals": [
              "Alice"
            ],
            "resources": [
              "*"
            ],
            "sid": "fullAccessForAliceToBucket"
          },
          {
            "effect": "allow",
            "actions": [
              "ListBucket",
```

```
            "GetObject"
          ],
          "principals": [
            "ann",
            "jack"
          ],
          "resources": [
            "bucket-1",
            "bucket-1/*"
          ],
          "sid": "AccessToListAndGetObjectForAnnAndJack",
          "conditions": [
            {
              "operator": "ip_address",
              "source_ips": [
                "1.1.1.1/10"
              ]
            },
            {
              "operator": "string_equals",
              "prefixes": [
                "pref1",
                "pref2"
              ],
              "usernames": [
                "user1",
                "user2"
              ],
              "delimiters": [
                "del1",
                "del2"
              ]
            },
            {
              "operator": "numeric_equals",
              "max_keys": [
                100
              ]
            }
          ]
        },
        {
          "effect": "deny",
          "actions": [
            "*Object"
          ],
```

```
          "principals": [
            "mike",
            "group/group1",
            "nasgroup/group2",
          ],
          "resources": [
            "bucket-1/policy-docs/*",
            "bucket-1/confidential-*"
          ],
          "sid": "DenyAccessToGetPutDeleteObjectForMike"
        },
        {
          "effect": "allow",
          "actions": [
            "GetObject"
          ],
          "principals": [
            "*"
          ],
          "resources": [
            "bucket-1/readme"
          ],
          "sid": "AccessToGetObjectForAnonymousUsers"
        },
        {
          "effect": "allow",
          "actions": [
            "GetObject"
          ],
          "principals": [
          ],
          "resources": [
            "bucket-1/policies/examples/*"
          ],
          "sid": "AccessToGetObjectForAllUsersOfSVM"
        }
      ]
    },
    "cors": {
      "rules": [
        {
          "id": "string",
          "allowed_origins": [
            "http://www.example.com"
          ],
          "allowed_methods": [
```

```
            "PUT",
            "DELETE"
          ],
          "allowed_headers": [
            "x-amz-request-id"
          ],
          "expose_headers": [
            "http://www.example.com"
          ],
          "max_age_seconds": 1024
        }
      ]
    }
  }
],
"num_records": 2
}
```


Retrieving the specified bucket associated with an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/buckets/527812ab-7c6d-11e9-97e8-0050568ea123" -H
"accept: application/json"

# The response:
{
"svm": {
  "uuid": "12f3ba4c-7ae0-11e9-8c06-0050568ea123",
  "name": "vs1"
},
"uuid": "527812ab-7c6d-11e9-97e8-0050568ea123",
"name": "bucket-2",
"volume": {
  "name": "fg_oss_1558514455",
  "uuid": "51276f5f-7c6d-11e9-97e8-0050568ea123"
},
"size": 209715200,
"logical_used_size": 157286400,
"encryption": {
  "enabled": false
},
"comment": "S3 bucket.",
"qos_policy": {
  "min_throughput_iops": 0,
  "min_throughput_mbps": 0,
  "max_throughput_iops": 1000,
  "max_throughput_mbps": 0,
  "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
  "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
},
"snapshot-policy": {
  "name": "default-1weekly",
  "uuid": "f9c5f090-4ac8-11ef-ba24-005056a7ceb6"
},
}
```

Creating an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"aggregates\": [ { \"name\":
\"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-8c06-0050568ea123\" } ],
\"comment\": \"S3 bucket.\", \"constituents_per_aggregate\": 4, \"name\":
\"bucket-3\"}"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with QoS policies and event selector for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:
curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/3e538980-f0af-11e9-ba68-
0050568e9798/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"comment\": \"S3 bucket.\",
\"name\": \"bucket-3\", \"qos_policy\": { \"min_throughput_iops\": 0,
\"min_throughput_mbps\": 0, \"max_throughput_iops\": 1000000,
\"max_throughput_mbps\": 900000, \"uuid\": \"02d07a93-6177-11ea-b241-
000c293feac8\", \"name\":
\"vs0_auto_gen_policy_02cfa02a_6177_11ea_b241_000c293feac8\" },
\"audit_event_selector\": { \"access\": \"all\", \"permission\":
\"all\"}}"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with policies for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/3e538980-f0af-11e9-ba68-
0050568e9798/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"aggregates\": [ { \"name\":
\"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-8c06-0050568ea123\" } ],
\"comment\": \"S3 bucket.\", \"constituents_per_aggregate\": 4, \"name\":
\"bucket-3\", \"policy\": { \"statements\": [ { \"actions\": [
\"GetObject\" ], \"conditions\": [ { \"operator\": \"ip_address\",
\"source_ips\": [ \"1.1.1.1/23\", \"1.2.2.2/20\" ] }, { \"max_keys\": [
1000 ], \"operator\": \"numeric_equals\" }, { \"delimiters\": [ \"/\" ],
\"operator\": \"string_equals\", \"prefixes\": [ \"pref\" ],
\"usernames\": [ \"user1\" ] } ], \"effect\": \"allow\", \"resources\": [
\"bucket-3/policies/examples/*\" ], \"sid\":
\"AccessToGetObjectForAllUsersofSVM\" }, { \"actions\": [ \"*Object\" ],
\"effect\": \"deny\", \"principals\": [ \"mike\", \"group/grp1\" ],
\"resources\": [ \"bucket-3/policy-docs/*\", \"bucket-3/confidential-*\"
], \"sid\": \"DenyAccessToObjectForMike\" }, { \"actions\": [
\"GetObject\" ], \"effect\": \"allow\", \"principals\": [ \"*\" ],
\"resources\": [ \"bucket-3/readme\" ], \"sid\":
\"AnonymousAccessToGetObjectForUsers\" } ] } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets/?name=bucket-3
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-3",
    "comment": "S3 bucket."
```

```
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Creating an S3 bucket along with lifecycle management rules

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/3e538980-f0af-11e9-ba68-
0050568e9798/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"aggregates\": [ { \"name\":
\"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-8c06-0050568ea123\" } ],
\"comment\": \"S3 bucket.\", \"constituents_per_aggregate\": 4, \"name\":
\"bucket-4\", \"lifecycle_management\": { \"rules\": [ { \"name\":
\"rule1\", \"expiration\": { \"object_age_days\" : \"1000\" } ,
\"abort_incomplete_multipart_upload\" : { \"after_initiation_days\" : 200
} , \"object_filter\": { \"prefix\" : \"obj1*/\" ,  \"size_greater_than\"
: \"1000\" } }, { \"name\": \"rule2\", \"object_filter\": {
\"size_greater_than\" : \"50\" }, \"expiration\": { \"object_age_days\" :
\"5000\" } } ] } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 18 April 2022 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets/?name=bucket-4
Content-Length: 363
Content-Type: application/json
```

```
{
"num_records": 1,
"records": [
  {
    "name": "bucket-4",
    "comment": "S3 bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```


Creating an S3 bucket with object locking enabled for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:

curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea143/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"aggregates\": [ { \"name\":
\"aggr5\", \"uuid\": \"12f3ba4c-7ae0-11e9-8c06-0050568ea143\" } ],
\"comment\": \"S3 Compliance mode bucket.\",
\"constituents_per_aggregate\": 4, \"name\": \"bucket-5\", \"retention\":
{ \"mode\": \"compliance\", \"default_period\" : \"P1Y\" } }"



# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2023 11:25:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea143/buckets/?name=bucket-5
Content-Length: 353
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "bucket-5",
    "comment": "S3 Compliance mode bucket."
  }
],
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea143",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea143"
    }
  }
}
}
```

Creating an S3 bucket with CORS rules for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/2da46d66-2327-
11ef-ab73-005056a7a2dd/buckets?return_timeout=0&return_records=true" -H
"accept: application/json" -H  "authorization: Basic YWRtaW46bmV0YXBwMSE="
-H  "Content-Type: application/json" -d "{  \"cors\": { \"rules\": [{
\"allowed_headers\": [ \"x-amz-request-id\" ], \"allowed_methods\": [
\"PUT\", \"DELETE\" ], \"allowed_origins\": [ \"http://www.example.com\"
], \"expose_headers\": [ \"http://www.example.com\" ], \"id\": \"id1\",
\"max_age_seconds\": 1024 }]}, \"name\": \"bucket1\"}"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 06 Jun 2024 09:18:26 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Location: /api/protocols/s3/services/2da46d66-2327-11ef-ab73-
005056a7a2dd/buckets/baf69601-23e5-11ef-ab73-005056a7a2dd
Content-Length: 871
Content-Type: application/json
Vary: Origin
{
"num_records": 1,
"records": [
  {
    "uuid": "baf69601-23e5-11ef-ab73-005056a7a2dd",
    "name": "bucket1",
    "type": "s3",
    "cors": {
      "rules": [
        {
          "id": "id1",
          "allowed_origins": [
            "http://www.example.com"
          ],
          "allowed_methods": [
            "PUT",
            "DELETE"
```

```
          ],
          "allowed_headers": [
            "x-amz-request-id"
          ],
          "expose_headers": [
            "http://www.example.com"
          ],
          "max_age_seconds": 1024
        }
      ]
    }
  }
],
"job": {
  "uuid": "baf69953-23e5-11ef-ab73-005056a7a2dd",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/baf69953-23e5-11ef-ab73-005056a7a2dd"
    }
  }
}
}
```


Creating an S3 bucket with a snapshot-policy

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets

# The call:
curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea143/buckets?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"comment\": \"S3 snapshot policy
bucket.\", \"snapshot_policy\": { \"name\": \"default-1weekly\", \"uuid\":
\"f9c5f090-4ac8-11ef-ba24-005056a7ceb6\" }, \"name\": \"bucket-6\" }"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 25 Jul 2024 16:40:37 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/8c38f10b-4871-11ef-aab5-
005056a7ceb6/buckets/9f21f404-4aa4-11ef-ba24-005056a7ceb6
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9f21f716-4aa4-11ef-ba24-005056a7ceb6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9f21f716-4aa4-11ef-ba24-005056a7ceb6"
    }
  }
}
}
```

Updating an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/buckets/754389d0-7e13-11e9-bfdc-0050568ea122" -H
"accept: application/json?return_records=true" -H "Content-Type:
application/json" -d "{ \"comment\": \"Bucket modified.\", \"size\":
111111111111,  \"qos_policy\": { \"min_throughput_iops\": 0,
\"min_throughput_mbps\": 0, \"max_throughput_iops\": 1000000,
\"max_throughput_mbps\": 900000, \"uuid\": \"02d07a93-6177-11ea-b241-
000c293feac8\", \"name\":
\"vs0_auto_gen_policy_02cfa02a_6177_11ea_b241_000c293feac8\"}}"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating an S3 bucket policy and event selector for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/3e538980-f0af-
11e9-ba68-0050568e9798/buckets/754389d0-7e13-11e9-bfdc-
0050568ea122?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"policy\": { \"statements\": [ {
\"actions\": [ \"*\" ], \"conditions\": [ { \"operator\": \"ip_address\",
\"source_ips\": [ \"1.1.1.1/23\", \"1.2.2.2/20\" ] }, { \"max_keys\": [
1000 ], \"operator\": \"numeric_equals\" }, { \"delimiters\": [ \"/\" ],
\"operator\": \"string_equals\", \"prefixes\": [ \"pref\" ],
\"usernames\": [ \"user1\" ] } ], \"effect\": \"allow\", \"resources\": [
\"*\" ], \"sid\": \"fullAccessForAllPrincipalsToBucket\"} ] },
\"audit_event_selector\": { \"access\": \"read\", \"permission\":
\"deny\"} }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating the default-retention period on an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/3e538980-f0af-
11e9-ba68-0050568e9798/buckets/754389d0-7e13-11e9-bfdc-
0050568ea122?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"retention\": { \"default_period\"
: \"P10Y\" } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2023 11:35:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea143",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea143"
    }
  }
}
}
```

Updating the CORS rules of an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/2da46d66-2327-
11ef-ab73-005056a7a2dd/buckets/dce4e40-2330-11ef-ab73-
005056a7a2dd?return_timeout=0" -H  "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H  "Content-Type:
application/json" -d "{ \"cors\": { \"rules\": [{ \"allowed_headers\": [
\"x-amz-new-header\" ], \"allowed_methods\": [ \"PUT\" ],
\"allowed_origins\": [ \"http://www.example.in\" ], \"expose_headers\": [
\"http://www.example\" ], \"id\": \"id3\", \"max_age_seconds\": 10 }]}}"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 06 Jun 2024 09:30:57 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Length: 189
Content-Type: application/json
Vary: Origin
{
"job": {
  "uuid": "7aaa2b64-23e7-11ef-ab73-005056a7a2dd",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/7aaa2b64-23e7-11ef-ab73-005056a7a2dd"
    }
  }
}
}
```

Updating the snapshot-policy for an S3 bucket for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/3e538980-f0af-
11e9-ba68-0050568e9798/buckets/754389d0-7e13-11e9-bfdc-
0050568ea122?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"snapshot_policy\": { \"name\":
\"default-1weekly\", \"uuid\": \"f9c5f090-4ac8-11ef-ba24-005056a7ceb6\" }
}"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 25 Jul 2024 16:56:44 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "df350023-4aa6-11ef-ba24-005056a7ceb6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/df350023-4aa6-11ef-ba24-005056a7ceb6"
    }
  }
}
}
```

Deleting an S3 bucket policy for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/3e538980-f0af-
11e9-ba68-0050568e9798/buckets/754389d0-7e13-11e9-bfdc-
0050568ea122?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"policy\": { \"statements\": [ ] }
}"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Deleting CORS rules for an S3 bucket in an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/3e538980-f0af-
11e9-ba68-0050568e9798/buckets/754389d0-7e13-11e9-bfdc-
0050568ea122?return_records=true" -H "accept: application/json" -H
"Content-Type: application/json" -d "{ \"cors\": { \"rules\": [ ] } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2024 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "9beafabb-7e17-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9beafabb-7e17-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Deleting an S3 bucket for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}

# The call:
curl -iku admin:<password> -X DELETE "https://<mgmt-
ip>/api/protocols/s3/services/12f3ba4c-7ae0-11e9-8c06-
0050568ea123/buckets/754389d0-7e13-11e9-bfdc-
0050568ea123?return_records=true" -H "accept: application/json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 May 2019 11:40:17 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "b3af4a54-7e18-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b3af4a54-7e18-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Retrieve the S3 bucket configurations for an SVM

GET `/protocols/s3/services/{svm.uuid}/buckets`

Introduced In: 9.7

Retrieves the S3 bucket's configuration of an SVM. Note that in order to retrieve S3 bucket policy conditions, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket show`
- `vserver object-store-server bucket policy statement show`
- `vserver object-store-server bucket policy-statement-condition show`
- `vserver object-store-server bucket lifecycle-management-rule show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets

Parameters

Name	Type	In	Required	Description
size	integer	query	False	Filter by size • Max value: 62672162783232000 • Min value: 199229440
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
role	string	query	False	Filter by role • Introduced in: 9.10
audit_event_selector.access	string	query	False	Filter by audit_event_selector.access • Introduced in: 9.10
audit_event_selector.permission	string	query	False	Filter by audit_event_selector.permission • Introduced in: 9.10
cors.rules.allowed_methods	string	query	False	Filter by cors.rules.allowed_methods • Introduced in: 9.16

Name	Type	In	Required	Description
cors.rules.id	string	query	False	Filter by cors.rules.id • Introduced in: 9.16 • maxLength: 256 • minLength: 0
cors.rules.expose_headers	string	query	False	Filter by cors.rules.expose_headers • Introduced in: 9.16
cors.rules.allowed_origins	string	query	False	Filter by cors.rules.allowed_origins • Introduced in: 9.16
cors.rules.allowed_headers	string	query	False	Filter by cors.rules.allowed_headers • Introduced in: 9.16
cors.rules.max_age_seconds	integer	query	False	Filter by cors.rules.max_age_seconds • Introduced in: 9.16
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
logical_used_size	integer	query	False	Filter by logical_used_size
encryption.enabled	boolean	query	False	Filter by encryption.enabled

Name	Type	In	Required	Description
retention.default_period	string	query	False	Filter by retention.default_period • Introduced in: 9.14
retention.mode	string	query	False	Filter by retention.mode • Introduced in: 9.14
lifecycle_management.rules.expiration.object_expiry_date	string	query	False	Filter by lifecycle_management.rules.expiration.object_expiry_date • Introduced in: 9.13
lifecycle_management.rules.expiration.object_age_days	integer	query	False	Filter by lifecycle_management.rules.expiration.object_age_days • Introduced in: 9.13
lifecycle_management.rules.expiration.expired_object_delete_marker	boolean	query	False	Filter by lifecycle_management.rules.expiration.expired_object_delete_marker • Introduced in: 9.13
lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days	integer	query	False	Filter by lifecycle_management.rules.abort_incomplete_multipart_upload.after_initiation_days • Introduced in: 9.13

Name	Type	In	Required	Description
lifecycle_management.rules.non_current_version_expiration.non_current_days	integer	query	False	Filter by lifecycle_management.rules.non_current_version_expiration.non_current_days • Introduced in: 9.13
lifecycle_management.rules.non_current_version_expiration.new_non_current_versions	integer	query	False	Filter by lifecycle_management.rules.non_current_version_expiration.new_non_current_versions • Introduced in: 9.13
lifecycle_management.rules.name	string	query	False	Filter by lifecycle_management.rules.name • Introduced in: 9.13 • maxLength: 256 • minLength: 0
lifecycle_management.rules.object_filter.tags	string	query	False	Filter by lifecycle_management.rules.object_filter.tags • Introduced in: 9.13
lifecycle_management.rules.object_filter.size_less_than	integer	query	False	Filter by lifecycle_management.rules.object_filter.size_less_than • Introduced in: 9.13

Name	Type	In	Required	Description
lifecycle_management.rules.object_filter.size_greater_than	integer	query	False	Filter by lifecycle_management.rules.object_filter.size_greater_than • Introduced in: 9.13
lifecycle_management.rules.object_filter.prefix	string	query	False	Filter by lifecycle_management.rules.object_filter.prefix • Introduced in: 9.13
lifecycle_management.rules.uuid	string	query	False	Filter by lifecycle_management.rules.uuid • Introduced in: 9.14
lifecycle_management.rules.bucket_name	string	query	False	Filter by lifecycle_management.rules.bucket_name • Introduced in: 9.14 • maxLength: 63 • minLength: 3
lifecycle_management.rules.svm.name	string	query	False	Filter by lifecycle_management.rules.svm.name • Introduced in: 9.14
lifecycle_management.rules.svm.uuid	string	query	False	Filter by lifecycle_management.rules.svm.uuid • Introduced in: 9.14

Name	Type	In	Required	Description
lifecycle_management.rules.enabled	boolean	query	False	Filter by lifecycle_management.rules.enabled • Introduced in: 9.13
qos_policy.uuid	string	query	False	Filter by qos_policy.uuid • Introduced in: 9.8
qos_policy.min_throughput_iops	integer	query	False	Filter by qos_policy.min_throughput_iops • Max value: 2147483647 • Min value: 0 • Introduced in: 9.8
qos_policy.min_throughput_mbps	integer	query	False	Filter by qos_policy.min_throughput_mbps • Max value: 4194303 • Min value: 0 • Introduced in: 9.8
qos_policy.max_throughput	string	query	False	Filter by qos_policy.max_throughput • Introduced in: 9.17
qos_policy.min_throughput	string	query	False	Filter by qos_policy.min_throughput • Introduced in: 9.17

Name	Type	In	Required	Description
qos_policy.max_throughput_iops	integer	query	False	Filter by qos_policy.max_throughput_iops • Max value: 2147483647 • Min value: 0 • Introduced in: 9.8
qos_policy.max_throughput_mbps	integer	query	False	Filter by qos_policy.max_throughput_mbps • Max value: 4194303 • Min value: 0 • Introduced in: 9.8
qos_policy.name	string	query	False	Filter by qos_policy.name • Introduced in: 9.8
is_nas_path_mutable	boolean	query	False	Filter by is_nas_path_mutable • Introduced in: 9.17
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name • Introduced in: 9.16
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid • Introduced in: 9.16

Name	Type	In	Required	Description
name	string	query	False	Filter by name • maxLength: 63 • minLength: 3
versioning_state	string	query	False	Filter by versioning_state • Introduced in: 9.11
protection_status.destination.is_cloud	boolean	query	False	Filter by protection_status.destination.is_cloud • Introduced in: 9.10
protection_status.destination.is_ontap	boolean	query	False	Filter by protection_status.destination.is_ontap • Introduced in: 9.10
protection_status.destination.is_external_cloud	boolean	query	False	Filter by protection_status.destination.is_external_cloud • Introduced in: 9.12
protection_status.is_protected	boolean	query	False	Filter by protection_status.is_protected • Introduced in: 9.10
type	string	query	False	Filter by type • Introduced in: 9.12
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
policy.statements.resources	string	query	False	Filter by policy.statements.resources • Introduced in: 9.8
policy.statements.sid	string	query	False	Filter by policy.statements.sid • Introduced in: 9.8 • maxLength: 256 • minLength: 0
policy.statements.effect	string	query	False	Filter by policy.statements.effect • Introduced in: 9.8
policy.statements.actions	string	query	False	Filter by policy.statements.actions • Introduced in: 9.8
policy.statements.conditions.prefixes	string	query	False	Filter by policy.statements.conditions.prefixes • Introduced in: 9.8
policy.statements.conditions.max_keys	integer	query	False	Filter by policy.statements.conditions.max_keys • Introduced in: 9.8
policy.statements.conditions.operator	string	query	False	Filter by policy.statements.conditions.operator • Introduced in: 9.8

Name	Type	In	Required	Description
policy.statements.conditions.source_ips	string	query	False	Filter by policy.statements.conditions.source_ips • Introduced in: 9.8
policy.statements.conditions.usernames	string	query	False	Filter by policy.statements.conditions.usernames • Introduced in: 9.8
policy.statements.conditions.delimiters	string	query	False	Filter by policy.statements.conditions.delimiters • Introduced in: 9.8
policy.statements.principals	string	query	False	Filter by policy.statements.principals • Introduced in: 9.8
is_consistent_etag	boolean	query	False	Filter by is_consistent_etag • Introduced in: 9.17
uuid	string	query	False	Filter by uuid
nas_path	string	query	False	Filter by nas_path • Introduced in: 9.12
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_bucket_svm]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "audit_event_selector": {
        "access": "string",
        "permission": "string"
      },
      "comment": "S3 bucket.",
      "cors": {
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "allowed_headers": [
              "x-amz-request-id"
            ],
            "allowed_methods": [
              "PUT",
              "DELETE"
            ],
            "allowed_origins": [
              "http://www.example.com"
            ],
            "expose_headers": [
              "x-amz-date"
            ],
            "id": "string",
            "max_age_seconds": 1024
          }
        ]
      },
      "lifecycle_management": {
```

```
        "rules": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "abort_incomplete_multipart_upload": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              }
            },
            "bucket_name": "bucket1",
            "expiration": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "object_age_days": 100,
              "object_expiry_date": "2039-09-22 20:00:00 -0400"
            },
            "name": "string",
            "non_current_version_expiration": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              }
            },
            "object_filter": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "prefix": "/logs",
              "size_greater_than": 10240,
              "size_less_than": 10485760,
              "tags": [
                "project1=projA",
                "project2=projB"
              ]
            },
```

```
            "svm": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "svm1",
              "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
            },
            "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
          }
        ]
      },
      "logical_used_size": 0,
      "name": "bucket1",
      "nas_path": "/",
      "policy": {
        "statements": [
          {
            "actions": [
              "GetObject",
              "PutObject",
              "DeleteObject",
              "ListBucket"
            ],
            "conditions": [
              {
                "delimiters": [
                  "/"
                ],
                "max_keys": [
                  1000
                ],
                "operator": "ip_address",
                "prefixes": [
                  "pref"
                ],
                "source_ips": [
                  "1.1.1.1",
                  "1.2.2.0/24"
                ],
                "usernames": [
                  "user1"
                ]
              }
            ],
```

```
            "effect": "allow",
            "principals": [
              "user1",
              "group/grp1",
              "nasgroup/group1"
            ],
            "resources": [
              "bucket1",
              "bucket1/*"
            ],
            "sid": "FullAccessToUser1"
          }
        ]
      },
      "qos_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "retention": {
```

```
        "default_period": "P10Y",
        "mode": "governance"
      },
      "role": "string",
      "size": 819200000,
      "snapshot_policy": {
        "name": "default-1weekly",
        "uuid": "3675af31-431c-12fa-114a-20675afebc12"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "s3",
      "uuid": "string",
      "versioning_state": "enabled",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be set in a POST or PATCH method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy. This field cannot be set using the PATCH method.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers.

Name	Type	Description
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. • Default value: • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be set in a POST method. • Default value: • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket_svm

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.

Name	Type	Description
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.

Name	Type	Description
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 bucket configuration for an SVM

POST `/protocols/s3/services/{svm.uuid}/buckets`

Introduced In: 9.7

Creates the S3 bucket configuration of an SVM.

Important notes

- Each SVM can have one or more bucket configurations.
- Aggregate lists should be specified explicitly. If not specified, then the bucket is auto-provisioned as a

FlexGroup.

- Constituents per aggregate specifies the number of components (or FlexVols) per aggregate. Is specified only when an aggregate list is explicitly defined.
- An access policy can be created when a bucket is created.
- "qos_policy" can be specified if a bucket needs to be attached to a QoS group policy during creation time.
- "audit_event_selector" can be specified if a bucket needs to be specify access and permission type for auditing.
- Cross-origin resource sharing (CORS) configuration can be specified when a bucket is created.

Required properties

- `svm.uuid` - Existing SVM in which to create the bucket configuration.
- `name` - Bucket name that is to be created.

Recommended optional properties

- `aggregates` - List of aggregates for the FlexGroup on which the bucket is hosted on.
- `constituents_per_aggregate` - Number of constituents per aggregate.
- `size` - Specifying the bucket size is recommended.
- `policy` - Specifying policy enables users to perform operations on buckets; specifying the resource permissions is recommended.
- `qos_policy` - A QoS policy for buckets.
- `audit_event_selector` - Audit policy for buckets.
- `versioning_state` - Versioning state for buckets.
- `type` - Type of bucket.
- `nas_path` - The NAS path to which the NAS bucket corresponds to.
- `use_mirrored_aggregates` - Specifies whether mirrored aggregates are selected when provisioning a FlexGroup volume.
- `lifecycle_management` - Object store server lifecycle management policy.
- `retention.mode` - Object lock mode supported on the bucket.
- `retention.default_period` - Specifies the duration of default-retention applicable for objects on the object store bucket.
- `cors` - Specifying CORS rules enables the bucket to service the cross-origin requests.
- `snapshot_policy` - Snapshot policy for the bucket.
- `is_consistent_etag` - Return a consistent ETag for NAS buckets.
- `is_nas_path_mutable` - Specifies whether the NAS bucket mapping with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount.

Default property values

- `size` - 800MB
- `comment` - ""
- `aggregates` - No default value.
- `constituents_per_aggregate` - *4* , if an aggregates list is specified. Otherwise, no default value.
- `policy.statements.actions` - GetObject, PutObject, DeleteObject, ListBucket, ListBucketMultipartUploads, ListMultipartUploadParts, GetObjectTagging, PutObjectTagging, DeleteObjectTagging, GetBucketVersioning, PutBucketVersioning.
- `policy.statements.principals` - all S3 users and groups in the SVM or the NAS groups.
- `policy.statements.resources` - all objects in the bucket.
- `policy.statements.conditions` - list of bucket policy conditions.
- `qos-policy` - No default value.
- `versioning_state` - disabled.
- `use_mirrored_aggregates` - *true* for a MetroCluster configuration and *false* for a non-MetroCluster configuration.
- `type` - S3.
- `retention.mode` - no_lock
- `is_consistent_etag` - false

Related ONTAP commands

- `vserver object-store-server bucket create`
- `vserver object-store-server bucket policy statement create`
- `vserver object-store-server bucket policy-statement-condition create`
- `vserver object-store-server bucket lifecycle-management-rule create`
- `vserver object-store-server bucket cors-rule create`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
aggregates	array[aggregates]	A list of aggregates for FlexGroup volume constituents where the bucket is hosted. If this option is not specified, the bucket is auto-provisioned as a FlexGroup volume. The "uuid" field cannot be used with the field "storage_service_level".
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
constituents_per_aggregate	integer	Specifies the number of constituents or FlexVol volumes per aggregate. A FlexGroup volume consisting of all such constituents across all specified aggregates is created. This option is used along with the aggregates option and cannot be used independently. This field cannot be set using the PATCH method.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.

Name	Type	Description
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.

Name	Type	Description
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.

Name	Type	Description
storage_service_level	string	Specifies the storage service level of the FlexGroup volume on which the bucket should be created. Valid values are "value", "performance" or "extreme". This field cannot be used with the field "aggregates.uuid" or with the "constituents_per_aggregate" in a POST method. This field cannot be set using the PATCH method.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Example request

```
{
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "constituents_per_aggregate": 4,
  "cors": {
    "rules": [
      {
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "lifecycle_management": {
    "rules": [
      {
        "bucket_name": "bucket1",
        "expiration": {
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "name": "string",
        "object_filter": {
```

```
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
    ]
  },
  "logical_used_size": 0,
  "name": "bucket1",
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
```

```
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
      }
    ]
  },
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "retention": {
    "default_period": "P10Y",
    "mode": "governance"
```

```
  },
  "role": "string",
  "size": 819200000,
  "snapshot_policy": {
    "name": "default-1weekly",
    "uuid": "3675af31-431c-12fa-114a-20675afebc12"
  },
  "storage_service_level": "value",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "s3",
  "uuid": "string",
  "versioning_state": "enabled",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405777 +	"Failed to create bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason of failure}. ";
92405785 +	"Bucket name "{bucket name}" contains invalid characters or invalid character combinations. Valid characters for a bucket name are 0-9, a-z, ".", and "-". Invalid character combinations are ".-", "-.", and "..". ";
92405786 +	"Bucket name "{bucket name}" is not valid. Bucket names must have between 3 and 63 characters. ";
92405811 +	"Failed to create bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405812 +	"Failed to create the object store volume. Reason: {Reason for failure}.";
92405819 +	"Cannot provision an object store server volume for bucket "{bucket name}" in SVM "{svm.name}" on the following aggregates because they are SnapLock aggregates: {List of aggregates.name}.";
92405820 +	"Failed to check whether the aggregate "{aggregates.name}" is a FabricPool. Reason: {Reason for failure}.";
92405821 +	"Cannot provision an object store server volume for bucket "{bucket name}" in SVM "{svm.name}" on the following aggregates because they are FabricPool: {List of aggregates.name}.";
92405827 +	"Internal Error. Unable to generate object store volume name.";
92405857 +	"One or more aggregates must be specified if "constituents_per_aggregate" is specified.";
92405858 +	"Failed to "create" the "bucket" because the operation is only supported on data SVMs.";
92405859 +	"The specified "aggregates.uuid" "{aggregates.uuid}" does not exist.";

Error code	Message
92405860 +	"The specified "aggregates.name" "{aggregates.name}" and "aggregates.uuid" "{aggregates.uuid}" do not refer to same aggregate.";
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92405863 +	"Failed to create access policies for bucket "{bucket name}". Reason: {Reason of Failure}. Resolve all the issues and retry the operation.";
92405863 +	"Failed to create event selector for bucket "{bucket name}". Reason: {Reason of failure}. Reason: object-store-server audit configuration not created for SVM "{svm.name}". Resolve all the issues and retry the operation.";
92405891 +	The resources specified in the access policy are not valid. Valid ways to specify a resource are *, <bucket-name>, <bucket-name>/…/…. Valid characters for a resource are 0-9, A-Z, a-z, _, +, comma, ;, :, =, ., &, @,?, (,), single quote, *, !, - and $.
92406166 +	"Cannot enable locking on a NAS bucket.";
92406170 +	"Cannot set "-default-retention-period" on object store bucket "{0}" in Vserver "{1}". Setting the default retention period on an object store bucket requires an effective cluster version of 9.14.1 or later.";
92406171 +	"Cannot set "{retention_mode}" to "compliance" in a MetroCluster configuration";
92406174 +	"Internal error. Failed to complete bucket create workflow with "-retention-mode" set to "compliance" or "governance". Reason: {0}";
92406175 +	"The SnapLock compliance clock is not running. Use the "snaplock compliance-clock initialize" command to initialize the compliance clock, and then try the operation again.";
92406176 +	"The SnapLock compliance clock is not running on the MetroCluster partner cluster. Use the "snaplock compliance-clock initialize" command to initialize the compliance clock on the MetroCluster partner cluster, and then try the operation again.";
92406230 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be greater than the maximum lock retention period set in the object store server for SVM "{SVM}". Check the maximum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";

Error code	Message
92406236 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be less than the minimum lock retention period set in the object store server for SVM "{SVM}". Check the minimum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";
92406217 +	"The specified "allowed_headers" is not valid because it contains more than one wild card ("*") character.";
92406224 +	"A Cross-Origin Resource Sharing (CORS) rule must have an origin and HTTP method specified.";
92406222 +	"Cannot specify Cross-Origin Resource Sharing (CORS) configuration for object store bucket "{bucket}" on SVM "{SVM}". Specifying such configuration is supported on object store volumes created in ONTAP 9.8 or later releases only.";
92406211 +	"The specified method "DONE" is not valid. Valid methods are GET, PUT, DELETE, HEAD, and POST.";
92405863 +	"Failed to create CORS rules for bucket "bb1". Reason: "Field "index" cannot be specified for this operation.". Resolve all the issues and retry the operation.";
92406228 +	"Cannot exceed the maximum limit of 100 Cross-Origin Resource Sharing (CORS) rules per S3 bucket "{bucket}" in SVM "{SVM}".";;

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be set in a POST or PATCH method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy. This field cannot be set using the PATCH method.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.

Name	Type	Description
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	

Name	Type	Description
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	

Name	Type	Description
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be set in a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

Name	Type	Description
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket_svm

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
aggregates	array[aggregates]	A list of aggregates for FlexGroup volume constituents where the bucket is hosted. If this option is not specified, the bucket is auto-provisioned as a FlexGroup volume. The "uuid" field cannot be used with the field "storage_service_level".
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
constituents_per_aggregate	integer	Specifies the number of constituents or FlexVol volumes per aggregate. A FlexGroup volume consisting of all such constituents across all specified aggregates is created. This option is used along with the aggregates option and cannot be used independently. This field cannot be set using the PATCH method.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.

Name	Type	Description
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.

Name	Type	Description
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.

Name	Type	Description
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
storage_service_level	string	Specifies the storage service level of the FlexGroup volume on which the bucket should be created. Valid values are "value", "performance" or "extreme". This field cannot be used with the field "aggregates.uuid" or with the "constituents_per_aggregate" in a POST method. This field cannot be set using the PATCH method.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 bucket configuration for an SVM

DELETE `/protocols/s3/services/{svm.uuid}/buckets/{uuid}`

Introduced In: 9.7

Deletes the S3 bucket configuration of an SVM. An access policy is also deleted on an S3 bucket "delete" command. All CORS rules are also deleted on bucket deletion.

Related ONTAP commands

- `vserver object-store-server bucket delete`
- `vserver object-store-server bucket policy statement delete`
- `vserver object-store-server bucket policy-statement-condition delete`
- `vserver object-store-server bucket lifecycle-management-rule delete`
- `vserver object-store-server bucket cors-rule delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405811 +	"Failed to delete bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405858 +	"Failed to "delete" the "bucket" because the operation is only supported on data SVMs.";
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92405779 +	"Failed to remove bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason for failure}. ";
92405813 +	"Failed to delete the object store volume. Reason: {Reason for failure}.";
92405864 +	"An error occurred when deleting an access policy. The reason for failure is detailed in the error message.";

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an S3 bucket for an SVM

GET `/protocols/s3/services/{svm.uuid}/buckets/{uuid}`

Introduced In: 9.7

Retrieves the S3 bucket configuration of an SVM. Note that in order to retrieve S3 bucket policy conditions, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket show`
- `vserver object-store-server bucket policy statement show`
- `vserver object-store-server bucket policy-statement-condition show`
- `vserver object-store-server bucket lifecycle-management-rule show`
- `vserver object-store-server bucket cors-rule show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
is_nas_path_mutable	boolean	Specifies whether the NAS bucket mapping or association with a NAS volume can change according to the changes in the NAS volume junction-path due to volume operations like mount and unmount and therefore the NAS bucket will have access to any path in a NAS volume that matches the specified nas-path. Or is immutable and therefore the NAS bucket will always have access to the same nas-path that was specified during bucket creation even if the volume junction-path has undergone changes after the bucket creation.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.

Name	Type	Description
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.

Name	Type	Description
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Example response


```
{
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "cors": {
    "rules": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "lifecycle_management": {
    "rules": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "abort_incomplete_multipart_upload": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
```

```
            }
          }
        },
        "bucket_name": "bucket1",
        "expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "name": "string",
        "non_current_version_expiration": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        },
        "object_filter": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
```

```
    ]
  },
  "logical_used_size": 0,
  "name": "bucket1",
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
```

```
      }
    ]
  },
  "qos_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "retention": {
    "default_period": "P10Y",
    "mode": "governance"
  },
  "role": "string",
  "size": 819200000,
  "snapshot_policy": {
    "name": "default-1weekly",
    "uuid": "3675af31-431c-12fa-114a-20675afebc12"
  },
  "svm": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "s3",
  "uuid": "string",
  "versioning_state": "enabled",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

audit_event_selector

Event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
_links	_links	
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.

Name	Type	Description
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be set in a POST or PATCH method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	
prefix	string	A prefix that is matched against object-names within a bucket.

Name	Type	Description
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy. This field cannot be set using the PATCH method.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud.
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers.

Name	Type	Description
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be set in a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an S3 bucket configuration for an SVM

PATCH `/protocols/s3/services/{svm.uuid}/buckets/{uuid}`

Introduced In: 9.7

Updates the S3 bucket configuration of an SVM.

Important notes

- The following fields can be modified for a bucket:
  - `comment` - Any information related to the bucket.
  - `size` - Bucket size.
  - `policy` - An access policy for resources (buckets and objects) that defines their permissions. New policies are created after existing policies are deleted. To retain any of the existing policy statements, you need to specify those statements again. Policy conditions can also be modified using this API.
  - `qos_policy` - A QoS policy for buckets.
  - `audit_event_selector` - Audit policy for buckets. None can be specified for both access and permission to remove audit event selector.
  - `versioning_state` - Versioning state for buckets.
  - `nas_path` - NAS path to which the NAS bucket corresponds to.
  - `retention.default_period` - Specifies the duration of default-retention applicable for objects on the object store bucket.
  - `cors` - Specifying CORS rules enables the bucket to service the cross-origin requests. New CORS rules are created after existing rules are deleted. To retain any of the existing rules, you need to specify those CORS rules again. To remove all the existing CORS rules, specify an empty CORS rules list.
  - `snapshot_policy` - Snapshot policy for the bucket.
  - `is_consistent_etag` - Return a consistent ETag for NAS buckets.

Related ONTAP commands

- `vserver object-store-server bucket modify`
- `vserver object-store-server bucket policy statement modify`

- `vserver object-store-server bucket policy-statement-condition modify`
- `vserver object-store-server bucket cors-rule create`
- `vserver object-store-server bucket cors-rule delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the bucket.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Example request

```
{
  "audit_event_selector": {
    "access": "string",
    "permission": "string"
  },
  "comment": "S3 bucket.",
  "cors": {
    "rules": [
      {
        "allowed_headers": [
          "x-amz-request-id"
        ],
        "allowed_methods": [
          "PUT",
          "DELETE"
        ],
        "allowed_origins": [
          "http://www.example.com"
        ],
        "expose_headers": [
          "x-amz-date"
        ],
        "id": "string",
        "max_age_seconds": 1024
      }
    ]
  },
  "is_nas_path_mutable": true,
  "lifecycle_management": {
    "rules": [
      {
        "expiration": {
          "object_age_days": 100,
          "object_expiry_date": "2039-09-22 20:00:00 -0400"
        },
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
    ]
  },
  "logical_used_size": 0,
```

```
  "nas_path": "/",
  "policy": {
    "statements": [
      {
        "actions": [
          "GetObject",
          "PutObject",
          "DeleteObject",
          "ListBucket"
        ],
        "conditions": [
          {
            "delimiters": [
              "/"
            ],
            "max_keys": [
              1000
            ],
            "operator": "ip_address",
            "prefixes": [
              "pref"
            ],
            "source_ips": [
              "1.1.1.1",
              "1.2.2.0/24"
            ],
            "usernames": [
              "user1"
            ]
          }
        ],
        "effect": "allow",
        "principals": [
          "user1",
          "group/grp1",
          "nasgroup/group1"
        ],
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToUser1"
      }
    ]
  },
  "qos_policy": {
```

```
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "retention": {
    "default_period": "P10Y"
  },
  "role": "string",
  "size": 819200000,
  "snapshot_policy": {
    "name": "default-1weekly",
    "uuid": "3675af31-431c-12fa-114a-20675afebc12"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "s3",
  "uuid": "string",
  "versioning_state": "enabled",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405778 +	"Failed to modify bucket "{bucket name}" for SVM "{svm.name}". Reason: {Reason for failure}. ";
92405846 +	"Failed to modify the object store volume. Reason: {Reason for failure}.";
92405811 +	"Failed to modify bucket "{bucket name}" for SVM "{svm.name}". Wait a few minutes and try the operation again.";
92405858 +	"Failed to "modify" the "bucket" because the operation is only supported on data SVMs.";
92405861 +	"The specified "{parameter field}", "{parameter value}", does not exist.";
92405863 +	"Failed to create access policies for bucket "{bucket name}". Reason: "Principal list can have a maximum of 10 entries.". Resolve all the issues and retry the operation.";

Error code	Message
92405864 +	"An error occurs when deleting an access policy. The reason for failure is detailed in the error message.";
92405891 +	The resources specified in the access policy are not valid. Valid ways to specify a resource are *, <bucket-name>, <bucket-name>/…/…. Valid characters for a resource are 0-9, A-Z, a-z, _, +, comma, ;, :, =, ., &, @,?, (,), single quote, *, !, - and $.
92405894 +	"Statements, principals and resources list can have a maximum of 10 entries.";
92405897 +	The principals specified in the access policy are not in the correct format. User name must be in between 1 and 64 characters. Valid characters for a user name are 0-9, A-Z, a-z, _, +, =, comma, ., @, and - .
92405898 +	"The SID specified in the access policy is not valid. Valid characters for a SID are 0-9, A-Z and a-z.";
92405940 +	"The specified condition key is not valid for operator "ip-address". Valid choices of keys for this operator: source-ips.";
92406014 +	"Failed to modify event selector for bucket "{bucket name}". If value of either access or permission is set to none, then the other must be set to none as well.";
92406032 +	"Modifying the NAS path for a NAS bucket is not supported.";
92406230 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be greater than the maximum lock retention period set in the object store server for SVM "{SVM}". Check the maximum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";
92406236 +	"The value for "retention.default_period" parameter for object store bucket "{bucket}" cannot be less than the minimum lock retention period set in the object store server for SVM "{SVM}". Check the minimum allowed lock retention period present in the object store server for SVM "{SVM}" and try the operation again.";
92406217 +	"The specified "allowed_headers" is not valid because it contains more than one wild card ("*") character.";
92406224 +	"A Cross-Origin Resource Sharing (CORS) rule must have an origin and HTTP method specified.";
92406222 +	"Cannot specify Cross-Origin Resource Sharing (CORS) configuration for object store bucket "{bucket}" on SVM "{SVM}". Specifying such configuration is supported on object store volumes created in ONTAP 9.8 or later releases only.";

Error code	Message
92406211 +	"The specified method "DONE" is not valid. Valid methods are GET, PUT, DELETE, HEAD, and POST.";
92405863 +	"Failed to create CORS rules for bucket "bb1". Reason: "Field "index" cannot be specified for this operation.". Resolve all the issues and retry the operation.";
92406228 +	"Cannot exceed the maximum limit of 100 Cross-Origin Resource Sharing (CORS) rules per S3 bucket "{bucket}" in SVM "{SVM}".";;

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

audit_event_selector

Event selector allows you to specify access and permission types to audit.

Name	Type	Description
access	string	Specifies read and write access types.
permission	string	Specifies allow and deny permission types.

rules

Information about the CORS rule of an S3 bucket.

Name	Type	Description
allowed_headers	array[string]	An array of HTTP headers allowed in the cross-origin requests.
allowed_methods	array[string]	An array of HTTP methods allowed in the cross-origin requests.
allowed_origins	array[string]	List of origins from where a cross-origin request is allowed to originate from for the S3 bucket.

Name	Type	Description
expose_headers	array[string]	List of extra headers sent in the response that customers can access from their applications.
id	string	Bucket CORS rule identifier. The length of the name can range from 0 to 256 characters.
max_age_seconds	integer	The time in seconds for your browser to cache the preflight response for the specified resource.

cors

Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.

Name	Type	Description
rules	array[rules]	Specifies an object store bucket CORS rule.

encryption

Name	Type	Description
enabled	boolean	Specifies whether encryption is enabled on the bucket. By default, encryption is disabled on a bucket. This field cannot be set in a POST or PATCH method.

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

rules

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

lifecycle_management

Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.

Name	Type	Description
rules	array[rules]	Specifies an object store lifecycle management policy. This field cannot be set using the PATCH method.

s3_bucket_policy_condition

Information about policy conditions based on various condition operators and condition keys.

Name	Type	Description
delimiters	array[string]	An array of delimiters that are compared with the delimiter value specified at the time of execution of an S3-based command, using the condition operator specified.
max_keys	array[integer]	An array of maximum keys that are allowed or denied to be retrieved using an S3 list operation, based on the condition operator specified.
operator	string	Condition operator that is applied to the specified condition key.
prefixes	array[string]	An array of prefixes that are compared with the input prefix value specified at the time of execution of an S3-based command, using the condition operator specified.
source_ips	array[string]	An array of IP address ranges that are compared with the IP address of a source command at the time of execution of an S3-based command, using the condition operator specified.
usernames	array[string]	An array of usernames that a current user in the context is evaluated against using the condition operators.

s3_bucket_policy_statement

Specifies information about a single access permission.

Name	Type	Description
actions	array[string]	
conditions	array[s3_bucket_policy_condition]	Specifies bucket policy conditions.
effect	string	Specifies whether access is allowed or denied when a user requests the specific action. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
principals	array[string]	
resources	array[string]	
sid	string	Specifies the statement identifier used to differentiate between statements. The sid length can range from 1 to 256 characters and can only contain the following combination of characters 0-9, A-Z, and a-z. Special characters are not valid.

policy

A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.

Name	Type	Description
statements	array[s3_bucket_policy_statement]	Specifies bucket access policy statement.

destination

Name	Type	Description
is_cloud	boolean	Specifies whether a bucket is protected within the Cloud.

Name	Type	Description
is_external_cloud	boolean	Specifies whether a bucket is protected on external Cloud providers.
is_ontap	boolean	Specifies whether a bucket is protected within ONTAP. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

protection_status

Specifies attributes of bucket protection.

Name	Type	Description
destination	destination	
is_protected	boolean	Specifies whether a bucket is a source and if it is protected within ONTAP and/or an external cloud. This field cannot be set in a POST method. • Default value: 1 • readOnly: 1 • Introduced in: 9.10 • x-nullable: true

qos_policy

Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

retention

Specifies the retention mode and default retention period configured on the bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

snapshot_policy

Specifies the bucket snapshot policy.

Name	Type	Description
name	string	Specifies the name of the snapshot policy.
uuid	string	Specifies the unique identifier of the snapshot policy.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

s3_bucket_svm

A bucket is a container of objects. Each bucket defines an object namespace. S3 requests specify objects using a bucket-name and object-name pair. An object resides within a bucket.

Name	Type	Description
audit_event_selector	audit_event_selector	Event selector allows you to specify access and permission types to audit.
comment	string	Can contain any additional information about the bucket being created or modified.

Name	Type	Description
cors	cors	Cross-origin resource sharing (CORS) specifies an object associated with a bucket. The CORS configuration enables the bucket to service the cross-origin requests. A request might typically come from an origin with a domain that is different to that of the bucket. By configuring a CORS rule, you can define a combination of allowed origins, HTTP headers and methods that a bucket can use to filter out the cross-origin requests that it can service successfully.
encryption	encryption	
is_consistent_etag	boolean	Specifies whether the NAS bucket returns a consistent ETag across different S3 requests.
lifecycle_management	lifecycle_management	Lifecycle management is implemented as an object associated with a bucket. It defines rules to be applied against objects within a bucket. These rules are applied in the background and can delete objects.
logical_used_size	integer	Specifies the bucket logical used size up to this point. This field cannot be set using the PATCH method.
nas_path	string	Specifies the NAS path to which the nas bucket corresponds to.

Name	Type	Description
policy	policy	A policy is an object associated with a bucket. It defines resource (bucket, folder, or object) permissions. These policies get evaluated when an S3 user makes a request by executing a specific command. The user must be part of the principal (user or group) specified in the policy. Permissions in the policies determine whether the request is allowed or denied.
protection_status	protection_status	Specifies attributes of bucket protection.
qos_policy	qos_policy	Specifies "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps". Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties. Setting or assigning a QoS policy to a bucket is not supported if its containing volume or SVM already has a QoS policy attached.
retention	retention	Specifies the retention mode and default retention period configured on the bucket.
role	string	Specifies the role of the bucket. This field cannot be set in a POST method.
size	integer	Specifies the bucket size in bytes; ranges from 190MB to 62PB.

Name	Type	Description
snapshot_policy	snapshot_policy	Specifies the bucket snapshot policy.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Specifies the bucket type. Valid values are "s3"and "nas". This field cannot be set using the PATCH method.
uuid	string	Specifies the unique identifier of the bucket. This field cannot be specified in a POST or PATCH method.
versioning_state	string	Specifies the versioning state of the bucket. Valid values are "disabled", "enabled" or "suspended". Note that the versioning state cannot be modified to 'disabled' from any other state.
volume	volume	Specifies the FlexGroup volume name and UUID where the bucket is hosted. This field cannot be set in a POST method.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 bucket lifecycle management rules

Protocols S3 services svm.uuid buckets s3_bucket.uuid rules endpoint overview

Overview

An S3 bucket lifecycle management rule is a list of objects. Each rule defines a set of actions to be performed on the object within the bucket.

Adding a lifecycle management rule on a S3 bucket under an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{uuid}/rules

# The call:
curl -iku admin:<password> -X POST "https://<mgmt-
ip>/api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules?return_timeout=0&return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"name\":
\"rule1\", \"expiration\" : { \"object_age_days\" : \"1000\" },
\"abort_incomplete_multipart_upload\" : { \"after_initiation_days\" : 200
} , \"object_filter\": { \"prefix\" : \"obj1*/\" ,  \"size_greater_than\"
: \"1000\" } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 30 November 2022 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules?name=bucket-4
Content-Length: 353
Content-Type: application/json
{
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea123",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea123"
    }
  }
}
}
```

Updating a lifecycle management rule on a S3 bucket under an SVM

```
# The call:
curl -iku admin:<password> -X PATCH "https://<mgmt-
ip>/api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules/rule1?return_timeout=0&return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"expiration\"
: { \"object_age_days\" : \"3000\" },
\"abort_incomplete_multipart_upload\" : { \"after_initiation_days\" :
\"5000\" } }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 30 November 2022 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules?name=bucket-4
Content-Length: 353
Content-Type: application/json
{
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea124",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea124"
    }
  }
}
}
```

Deleting a lifecycle management rule on a S3 bucket under an SVM

```
# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/259b4e78-2893-
67ea-9785-890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules/rule1"  -H "accept: application/json"
```

To delete an action within a rule, pass null inside the action-object.

```
# The call:
curl -iku admin:<password> -X PATCH "https://<mgmt-
ip>/api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules/rule1?return_timeout=0&return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"expiration\"
: null }"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 30 November 2022 11:22:14 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/259b4e78-2893-67ea-9785-
890456bbbec4/buckets/259b4e46-2893-67ea-9145-
909456bbbec4/rules?name=bucket-4
Content-Length: 353
Content-Type: application/json
{
"job": {
  "uuid": "2e880171-7e16-11e9-bfdc-0050568ea124",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/2e880171-7e16-11e9-bfdc-0050568ea124"
    }
  }
}
}
```

Retrieve S3 lifecycle rules for a bucket

GET `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules`

Introduced In: 9.13

Retrieves all S3 Lifecycle rules associated with a bucket. Note that in order to retrieve S3 bucket rule parameters, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket lifecycle-management-rule show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules

Parameters

Name	Type	In	Required	Description
expiration.object_expiry_date	string	query	False	Filter by expiration.object_expiry_date
expiration.object_age_days	integer	query	False	Filter by expiration.object_age_days
expiration.expired_object_delete_marker	boolean	query	False	Filter by expiration.expired_object_delete_marker
abort_incomplete_multipart_upload.after_initiation_days	integer	query	False	Filter by abort_incomplete_multipart_upload.after_initiation_days
non_current_version_expiration.non_current_days	integer	query	False	Filter by non_current_version_expiration.non_current_days
non_current_version_expiration.new_non_current_versions	integer	query	False	Filter by non_current_version_expiration.new_non_current_versions
name	string	query	False	Filter by name • maxLength: 256 • minLength: 0
object_filter.tags	string	query	False	Filter by object_filter.tags
object_filter.size_less_than	integer	query	False	Filter by object_filter.size_less_than
object_filter.size_greater_than	integer	query	False	Filter by object_filter.size_greater_than
object_filter.prefix	string	query	False	Filter by object_filter.prefix

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid • Introduced in: 9.14
bucket_name	string	query	False	Filter by bucket_name • Introduced in: 9.14 • maxLength: 63 • minLength: 3
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.14
enabled	boolean	query	False	Filter by enabled
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_bucket_lifecycle_rule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "abort_incomplete_multipart_upload": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "bucket_name": "bucket1",
      "expiration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "object_age_days": 100,
        "object_expiry_date": "2039-09-22 20:00:00 -0400"
      },
      "name": "string",
      "non_current_version_expiration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "object_filter": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "prefix": "/logs",
          "size_greater_than": 10240,
          "size_less_than": 10485760,
          "tags": [
            "project1=projA",
            "project2=projB"
          ]
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_bucket_lifecycle_rule

Information about the lifecycle management rule of a bucket.

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.

Name	Type	Description
uuid	string	Specifies the unique identifier of the bucket.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the S3 bucket lifecycle rule configuration

POST `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules`

Introduced In: 9.13

Creates the S3 bucket lifecycle rule configuration.

Required properties

- `name` - Lifecycle Management rule to be created.
- `actions` - Lifecycle Management actions associated with the rule.

Recommended optional properties

- `enabled` - Lifecycle Management rule is enabled or not.
- `object_filter.prefix` - Lifecycle Management rule filter prefix.
- `object_filter.tags` - Lifecycle Management rule filter tags.
- `object_filter.size_greater_than` - Lifecycle Management rule filter minimum object size.
- `object_filter.size_less_than` - Lifecycle Management rule filter maximum object size.

- `object_age_days` - Number of days since creation after which objects can be deleted.
- `object_expiry_date` - Specific date from when objects can expire.
- `expired_object_delete_marker` - Cleanup object delete markers.
- `new_non_current_versions` - Number of latest non-current versions to be retained.
- `non_current_days` - Number of days after which non-current versions can be deleted.
- `after_initiation_days` - Number of days of initiation after which uploads can be aborted.

Related ONTAP commands

- `vserver object-store-server bucket lifecycle-management-rule create`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	Unique identifier of a bucket.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14

Request Body

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

Example request

```
{
  "bucket_name": "bucket1",
  "expiration": {
    "object_age_days": 100,
    "object_expiry_date": "2039-09-22 20:00:00 -0400"
  },
  "name": "string",
  "object_filter": {
    "prefix": "/logs",
    "size_greater_than": 10240,
    "size_less_than": 10485760,
    "tags": [
      "project1=projA",
      "project2=projB"
    ]
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92406111 +	"Lifecycle Management rule "rule1" for bucket "testbuck1" in SVM "vs0" is invalid because of the number of tags specified. The maximum number of tags supported is four.";
92406113 +	"Lifecycle Management rule for bucket in Vserver is invalid because there is a mismatch in one of the filter-field. Filters must be the same for a particular rule identifier.";
92406114 +	"The Expiration action requires specifying either object_expiry_date, object_age_days or expired_object_delete_marker.";
92406115 +	"The NonCurrentVersionExpiration action requires either new_non_current_versions or non_current_days.";
92406116 +	"The AbortIncompleteMultipartUpload action requires after_initiation_days.";
92406117 +	"The "Expiration" action cannot have both an expiry date and an age.";
92406118 +	"Using Lifecycle Management rules requires an effective cluster version of 9.13.1 .";
92406120 +	"The "AbortIncompleteMultipartUpload" action cannot be specified with tags.";
92406121 +	""expired_object_delete_marker" cannot be specified with "tags"."

Error code	Message
92406122 +	""expired_object_delete_marker" cannot be specified with "object_age_days" or "object_expiry_date"..";
92406123 +	"Expiration is supported on object store volumes only, bucket "testbuck-nas" on SVM "vs0" is not an object store volume.";
92406126 +	"Lifecycle Management rule "rule1" for bucket "testbuck1" in SVM "vs0" is invalid because specified tags contain one or more invalid characters. Valid characters for a tag are 0-9, A-Z, a-z, "+", "-", "=", ".", "_", ":", "/", "@", and " ". Each "=" character present in a tag key or value must be prefixed with the "" escape character.";
92406127 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" is invalid because specified tag "key" length is greater than the maximum allowed length: 128.";
92406128 +	"Lifecycle Management rule "rule1" for bucket "testbuck1" in SVM "vs0" has tags with duplicate keys. Verify that each tag has a unique key and then try the operation again.";
92406129 +	"Lifecycle Management rule "rule1" for bucket "testbuck1" in SVM "vs0" has a prefix that is too long. The maximum length of the prefix is 1024 characters.";
92406130 +	"Lifecycle Management rule "rule1" for bucket "testbuck1" in SVM "vs0" is invalid because the minimum object size of 10485760 is larger than or equal to the maximum object size of 10240.";
92406131 +	"Lifecycle Management rule "testcheck2" for bucket "testbuck1" in SVM "vs0" cannot be created because "non_current_days" must be specified along with "new_non_current_versions".";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "object_age_days" to be greater than zero.";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "new_non_current_versions" to be greater than zero.";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "after_initiation_days" to be greater than zero.";
92406133 +	"Lifecycle Management rule for bucket in Vserver is invalid. The object_expiry_date must be later than January 1, 1970.";

Error code	Message
92406134 +	"Cannot exceed the max limit of 1000 Lifecycle Management rules per bucket.";
92406135 +	"MetroCluster is configured on cluster. Object Expiration is not supported in a MetroCluster configuration.";
92406136 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" is invalid. The "object_expiry_date" must be at midnight GMT.";
92406139 +	"Lifecycle Management rule for bucket in Vserver with action is a stale entry. Contact technical support for assistance.";
92406141 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" with action "Expiration" cannot have "expired_object_delete_marker" disabled. To disable "expired_object_delete_marker", run the "vserver object-store-server bucket lifecycle-management-rule delete" command.";
92406143 +	"As part of Bucket Lifecycle, cannot create fabriclink relationship on bucket "{bucket name}" in SVM "{SVM name}". Reason : {error}.";
92406144 +	"The "AbortIncompleteMultipartUpload" action cannot be specified with object size.";
92406150 +	""expired_object_delete_marker" cannot be specified with "size_less_than".";
92406148 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" cannot have "new_non_current_versions" more than 100.";
92406149 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" requires an action to be specified. Retry the operation after adding an action.";

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_bucket_lifecycle_rule

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 bucket lifecycle rule

DELETE `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules/{name}`

Introduced In: 9.13

Deletes the S3 bucket lifecycle rule configuration.

Related ONTAP commands

- `vserver object-store-server bucket lifecycle-management-rule delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
name	string	path	True	The unique identifier of the bucket lifecycle_management rule.

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92406139 +	"Lifecycle Management rule for bucket in Vserver with action is a stale entry. Contact technical support for assistance.";

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve all S3 lifecycle rules for a bucket

GET `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules/{name}`

Introduced In: 9.13

Retrieves all S3 Lifecycle rules associated with a bucket. Note that in order to retrieve S3 bucket rule parameters, the 'fields' option should be set to '**'.

Related ONTAP commands

- `vserver object-store-server bucket lifecycle-management-rule show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
name	string	path	True	The name of the lifecycle management rule to be applied on the bucket.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
bucket_name	string	Specifies the name of the bucket. Bucket name is a string that can only contain the following combination of ASCII-range alphanumeric characters 0-9, a-z, ".", and "-".
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
name	string	Bucket lifecycle management rule identifier. The length of the name can range from 0 to 256 characters.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
object_filter	object_filter	Specifies a way to filter objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "abort_incomplete_multipart_upload": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "bucket_name": "bucket1",
  "expiration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "object_age_days": 100,
    "object_expiry_date": "2039-09-22 20:00:00 -0400"
  },
  "name": "string",
  "non_current_version_expiration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "object_filter": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "prefix": "/logs",
    "size_greater_than": 10240,
    "size_less_than": 10485760,
    "tags": [
      "project1=projA",
      "project2=projB"
    ]
```

```
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
_links	_links	
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
_links	_links	

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
_links	_links	
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the S3 bucket lifecycle rule configuration

PATCH `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules/{name}`

Introduced In: 9.13

Updates the S3 bucket lifecycle rule configuration.

Important notes

- The following fields can be modified for a bucket:
- `actions` - Lifecycle Management actions associated with the rule.
- `enabled` - Lifecycle Management rule is enabled or not..
- `object_age_days` - Number of days since creation after which objects can be deleted.
- `object_expiry_date` - Specific date from when objects can expire.
- `expired_object_delete_marker` - Cleanup object delete markers.
- `new_non_current_versions` - Number of latest non-current versions to be retained.
- `non_current_days` - Number of days after which non-current versions can be deleted.
- `after_initiation_days` - Number of days of initiation after which uploads can be aborted.

Related ONTAP commands

- `vserver object-store-server bucket lifecycle-management-rule modify`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/rules

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
name	string	path	True	The name of the lifecycle management rule to be applied on the bucket.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs. • Introduced in: 9.14

Request Body

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
enabled	boolean	Specifies whether or not the associated rule is enabled.
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

Example request

```
{
  "expiration": {
    "object_age_days": 100,
    "object_expiry_date": "2039-09-22 20:00:00 -0400"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_bucket_lifecycle_rule]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "expiration": {
        "object_age_days": 100,
        "object_expiry_date": "2039-09-22 20:00:00 -0400"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "414b29a1-3b26-11e9-bd58-0050568ea055"
    }
  ]
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92406114 +	"The Expiration action requires specifying either object_expiry_date, object_age_days or expired_object_delete_marker.";
92406115 +	"The NonCurrentVersionExpiration action requires either new_non_current_versions or non_current_days.";
92406116 +	"The AbortIncompleteMultipartUpload action requires after_initiation_days.";
92406117 +	"The "Expiration" action cannot have both an expiry date and an age.";
92406118 +	"Using Lifecycle Management rules requires an effective cluster version of 9.13.1 .";
92406122 +	""expired_object_delete_marker" cannot be specified with "object_age_days" or "object_expiry_date".";
92406131 +	"Lifecycle Management rule "testcheck2" for bucket "testbuck1" in SVM "vs0" cannot be created because "non_current_days" must be specified along with "new_non_current_versions".";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "object_age_days" to be greater than zero.";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "new_non_current_versions" to be greater than zero.";
92406132 +	"Lifecycle Management rule "{rule}" for bucket "{bucket}" in SVM "{SVM}" requires "after_initiation_days" to be greater than zero.";
92406133 +	"Lifecycle Management rule for bucket in Vserver is invalid. The object_expiry_date must be later than January 1, 1970.";

Error code	Message
92406135 +	"MetroCluster is configured on cluster. Object Expiration is not supported in a MetroCluster configuration.";
92406136 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" is invalid. The "object_expiry_date" must be at midnight GMT.";
92406139 +	"Lifecycle Management rule for bucket in Vserver with action is a stale entry. Contact technical support for assistance.";
92406142 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" with action "Expiration" cannot have "expired_object_delete_marker" disabled. To disable "expired_object_delete_marker", run the "vserver object-store-server bucket lifecycle-management-rule delete" command.";
92406146 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" already exists. Delete the rule and then try the operation again.";
92406148 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" cannot have "new_non_current_versions" more than 100.";
92406149 +	"Lifecycle Management rule "rule1" for bucket "buck1" in SVM "vs0" requires an action to be specified. Retry the operation after adding an action.";

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

abort_incomplete_multipart_upload

Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.

Name	Type	Description
after_initiation_days	integer	Number of days of initiation after which uploads can be aborted.

expiration

Specifies a way to perform expiration action on filtered objects within a bucket.

Name	Type	Description
expired_object_delete_marker	boolean	Cleanup object delete markers.
object_age_days	integer	Number of days since creation after which objects can be deleted. This cannot be used along with object_expiry_date.
object_expiry_date	string	Specific date from when objects can expire. This cannot be used with object_age_days.

non_current_version_expiration

Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.

Name	Type	Description
new_non_current_versions	integer	Number of latest non-current versions to be retained.
non_current_days	integer	Number of days after which non-current versions can be deleted.

object_filter

Specifies a way to filter objects within a bucket.

Name	Type	Description
prefix	string	A prefix that is matched against object-names within a bucket.
size_greater_than	integer	Size of the object greater than specified for which the corresponding lifecycle rule is to be applied.
size_less_than	integer	Size of the object smaller than specified for which the corresponding lifecycle rule is to be applied.
tags	array[string]	An array of key-value paired tags of the form <tag>or <tag=value>.</tag>

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_bucket_lifecycle_rule

Information about the lifecycle management rule of a bucket.

Name	Type	Description
abort_incomplete_multipart_upload	abort_incomplete_multipart_upload	Specifies a way to perform abort_incomplete_multipart_upload action on filtered objects within a bucket. It cannot be specified with tags.
enabled	boolean	Specifies whether or not the associated rule is enabled.

Name	Type	Description
expiration	expiration	Specifies a way to perform expiration action on filtered objects within a bucket.
non_current_version_expiration	non_current_version_expiration	Specifies a way to perform non_current_version_expiration action on filtered objects within a bucket.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	Specifies the unique identifier of the bucket.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 bucket snapshots

Protocols S3 services svm.uuid buckets s3_bucket.uuid snapshots endpoint overview

Overview

An S3 bucket snapshot is an image of the bucket as it exists at the time when the snapshot is created.

S3 bucket snapshots can be created using scheduled snapshot policies set on the bucket, or user requested snapshot creations.

S3 bucket snapshot APIs allow you to create, delete, and retrieve snapshots.

Snapshot APIs

The following APIs are used to perform operations related to snapshots.

– POST /api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

– GET /api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

– GET /api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{uuid}

– DELETE /api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{uuid}

Examples

Creating an S3 bucket snapshot

The POST operation is used to create an S3 bucket snapshot with the specified name.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots:

# The call:
curl -X POST -k "https://<mgmt-
ip>/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshot
s" -H "accept: application/json" -d '{"name" : "ss1"}'

# The response:
{
"job": {
  "uuid": "af10a4d1-60b3-11ef-82cf-005056ae1130",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/af10a4d1-60b3-11ef-82cf-005056ae1130"
    }
  }
}
}

# The Job:
{
"uuid": "af10a4d1-60b3-11ef-82cf-005056ae1130",
"description": "POST /api/protocols/s3/services/148b9bbd-58d8-11ef-b7ca-
005056ae1130/buckets/2aec8270-58e3-11ef-861e-
005056ae1130/snapshots/?name=ss1",
"state": "success",
```

```
"message": "success",
"code": 0,
"start_time": "2024-08-22T14:23:52-04:00",
"end_time": "2024-08-22T14:23:54-04:00",
"svm": {
  "name": "vs0",
  "uuid": "148b9bbd-58d8-11ef-b7ca-005056ae1130",
  "_links": {
    "self": {
      "href": "/api/svm/svms/148b9bbd-58d8-11ef-b7ca-005056ae1130"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/jobs/af10a4d1-60b3-11ef-82cf-005056ae1130"
  }
}
}
```


Retrieving S3 bucket snapshots

The GET operation is used to retrieve all S3 bucket snapshots for a specific bucket.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots:

# The call:
curl -X GET -k "https://<mgmt-
ip>/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshot
s" -H "accept: application/json"

# The response:
{
"records": [
  {
    "uuid": "20837456-3c8b-405a-aa3a-5300c048f87d",
    "name": "ss1"
  },
  {
    "uuid": "c67cd056-d386-477a-8378-fcc06987bedf",
    "name": "ss2"
  }
],
"num_records": 2
}
```

Retrieving S3 bucket snapshots and all snapshot attributes

The GET operation is used to retrieve all S3 bucket snapshots for a specific bucket along with all the snapshot attributes.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots:

# The call:
curl -X GET -k "https://<mgmt-
ip>/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshot
s?fields=**" -H "accept: application/json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "148b9bbd-58d8-11ef-b7ca-005056ae1130"
    },
    "bucket": {
      "uuid": "2aec8270-58e3-11ef-861e-005056ae1130"
    },
    "uuid": "20837456-3c8b-405a-aa3a-5300c048f87d",
    "name": "ss1",
    "create_time": "2024-08-22T14:23:54-04:00"
  },
  {
    "svm": {
      "uuid": "148b9bbd-58d8-11ef-b7ca-005056ae1130"
    },
    "bucket": {
      "uuid": "2aec8270-58e3-11ef-861e-005056ae1130"
    },
    "uuid": "c67cd056-d386-477a-8378-fcc06987bedf",
    "name": "ss2",
    "create_time": "2024-08-22T14:30:42-04:00"
  }
],
"num_records": 2
}
```

Retrieving the attributes of a specific S3 bucket snapshot

The GET operation is used to retrieve the attributes of a specific S3 bucket snapshot.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{
uuid}:

# The call:
curl -X GET -k "https://<mgmt-
ip>/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshot
s/{uuid}" -H "accept: application/json"

# The response:
{
"svm": {
  "uuid": "148b9bbd-58d8-11ef-b7ca-005056ae1130"
},
"bucket": {
  "uuid": "2aec8270-58e3-11ef-861e-005056ae1130"
},
"uuid": "c67cd056-d386-477a-8378-fcc06987bedf",
"name": "ss2",
"create_time": "2024-08-22T14:30:42-04:00"
}
```

Deleting an S3 bucket snapshot

The DELETE operation is used to delete an S3 bucket snapshot.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{
uuid}:

# The call:
curl -X DELETE -k "https://<mgmt-
ip>/api/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshot
s/{uuid}" -H "accept: application/json"

# The response:
{
"job": {
  "uuid": "94f97fa9-60b7-11ef-82cf-005056ae1130",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/94f97fa9-60b7-11ef-82cf-005056ae1130"
    }
  }
}
```

```
}

# The Job:
{
"uuid": "94f97fa9-60b7-11ef-82cf-005056ae1130",
"description": "DELETE /api/protocols/s3/services/148b9bbd-58d8-11ef-b7ca-
005056ae1130/buckets/2aec8270-58e3-11ef-861e-
005056ae1130/snapshots/c67cd056-d386-477a-8378-fcc06987bedf",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2024-08-22T14:51:46-04:00",
"end_time": "2024-08-22T14:51:47-04:00",
"svm": {
  "name": "vs0",
  "uuid": "148b9bbd-58d8-11ef-b7ca-005056ae1130",
  "_links": {
    "self": {
      "href": "/api/svm/svms/148b9bbd-58d8-11ef-b7ca-005056ae1130"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/jobs/94f97fa9-60b7-11ef-82cf-005056ae1130"
  }
}
}
```

Retrieve a collection of S3 bucket snapshots

GET `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots`

Introduced In: 9.16

Retrieves a collection of S3 bucket snapshots.

Related ONTAP commands

- `vserver object-store-server bucket snapshot show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
uuid	string	query	False	Filter by uuid
svm.name	string	query	False	Filter by svm.name
create_time	string	query	False	Filter by create_time
bucket_uuid	string	query	False	Filter by bucket_uuid
name	string	query	False	Filter by name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_bucket_snapshot]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "bucket_uuid": "2aec8270-58e3-11ef-861e-005056ae1130",
      "create_time": "2024-08-21 20:18:04 -0400",
      "name": "snap1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "522b29a1-3b26-11e9-bd58-0050568ea321"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_bucket_snapshot

Information about an S3 bucket snapshot.

Name	Type	Description
_links	_links	
bucket_uuid	string	The unique identifier of the bucket.
create_time	string	Creation time of the snapshot. It is the storage unit access time when the snapshot was created.

Name	Type	Description
name	string	The name of the snapshot. Snapshot names must start with a lowercase letter, a number, or a hyphen, must end with a lowercase letter or a number, and cannot exceed 30 characters.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	The UUID of the snapshot in the bucket that uniquely identifies the snapshot in that bucket.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 bucket snapshot

POST `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots`

Introduced In: 9.16

Creates an S3 bucket snapshot.

Required properties

- `name` - Name of the S3 bucket snapshot to be created.

Related ONTAP commands

- `vserver object-store-server bucket snapshot create`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	Unique identifier of a bucket.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
bucket_uuid	string	The unique identifier of the bucket.
create_time	string	Creation time of the snapshot. It is the storage unit access time when the snapshot was created.
name	string	The name of the snapshot. Snapshot names must start with a lowercase letter, a number, or a hyphen, must end with a lowercase letter or a number, and cannot exceed 30 characters.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	The UUID of the snapshot in the bucket that uniquely identifies the snapshot in that bucket.

Example request

```
{
  "bucket_uuid": "2aec8270-58e3-11ef-861e-005056ae1130",
  "create_time": "2024-08-21 20:18:04 -0400",
  "name": "snap1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "522b29a1-3b26-11e9-bd58-0050568ea321"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92406249 +	"Failed to create S3 bucket snapshot "{snapshot name}" for S3 bucket "{bucket name}" in SVM "{svm name}". Reason: {Reason for failure} ";

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_bucket_snapshot

Information about an S3 bucket snapshot.

Name	Type	Description
bucket_uuid	string	The unique identifier of the bucket.
create_time	string	Creation time of the snapshot. It is the storage unit access time when the snapshot was created.
name	string	The name of the snapshot. Snapshot names must start with a lowercase letter, a number, or a hyphen, must end with a lowercase letter or a number, and cannot exceed 30 characters.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	The UUID of the snapshot in the bucket that uniquely identifies the snapshot in that bucket.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 bucket snapshot

DELETE `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{uuid}`

Introduced In: 9.16

Deletes S3 bucket snapshot.

Related ONTAP commands

- `vserver object-store-server bucket snapshot delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
uuid	string	path	True	The unique identifier of the S3 bucket snapshot.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error code	Message
92405861 +	"The specified SVM UUID or bucket UUID does not exist.";
92406250 +	"Failed to delete S3 bucket snapshot "{snapshot name}" for S3 bucket "{bucket name}" in SVM "{svm name}". Reason: {Reason for failure} ";
92406278 +	"Failed to delete S3 bucket snapshot with UUID "{snapshot uuid}" for S3 bucket "{bucket name}" in SVM "{svm name}". Reason: {Reason for failure} ";

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve details of a specific S3 bucket snapshot

GET `/protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots/{uuid}`

Introduced In: 9.16

Retrieves details of a specific S3 bucket snapshot.

Related ONTAP commands

- `vserver object-store-server bucket snapshot show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/buckets/{s3_bucket.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
s3_bucket.uuid	string	path	True	The unique identifier of the bucket.
uuid	string	path	True	The unique identifier of the S3 bucket snapshot.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
bucket_uuid	string	The unique identifier of the bucket.
create_time	string	Creation time of the snapshot. It is the storage unit access time when the snapshot was created.

Name	Type	Description
name	string	The name of the snapshot. Snapshot names must start with a lowercase letter, a number, or a hyphen, must end with a lowercase letter or a number, and cannot exceed 30 characters.
svm	svm	Specifies the name of the SVM where this bucket exists.
uuid	string	The UUID of the snapshot in the bucket that uniquely identifies the snapshot in that bucket.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "bucket_uuid": "2aec8270-58e3-11ef-861e-005056ae1130",
  "create_time": "2024-08-21 20:18:04 -0400",
  "name": "snap1",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "522b29a1-3b26-11e9-bd58-0050568ea321"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Specifies the name of the SVM where this bucket exists.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 service group configuration

Protocols S3 services svm.uuid groups endpoint overview

Overview

An S3 group consists of one or many users. Policies are attached to the S3 group to have access control over S3 resources at group level.

Examples

Retrieving all fields for all S3 groups of an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/groups:

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-
0050568ea123/groups?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "comment": "Admin group",
    "id": 5,
    "name": "Admin-Group",
    "policies": [
      { "name": "Policy1" },
      { "name": "Policy2" },
      { "name": "Policy3" }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "users": [
      { "name": "User1" },
      { "name": "User2" },
      { "name": "User3" }
    ]
  },
  {
    "comment": "Admin group",
    "id": 6,
```

```
    "name": "Admin-Group1",
    "policies": [
      { "name": "Policy1" },
      { "name": "Policy2" },
      { "name": "Policy3" }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "users": [
      { "name": "User1" },
      { "name": "User2" },
      { "name": "User6" }
    ]
  }
],
"num_records": 2
}
```


Retrieving the specified group in the SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/groups/{group_id}:

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/groups/5?fields=*" -H "accept: application/json"

# The response:
{
"comment": "Admin group",
"id": 5,
"name": "Admin-Group",
"policies": [
  { "name": "Policy1" },
  { "name": "Policy2" },
  { "name": "Policy3" }
],
"svm": {
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"users": [
  { "name": "User1" },
  { "name": "User2" },
  { "name": "User3" }
]
}
```

Creating an S3 group for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/groups

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/groups?return_records=true" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE=" -H
"Content-Type: application/json" -d "{ \"comment\": \"Admin group\",
\"name\": \"Admin-Group\", \"policies\": [ { \"name\": \"Policy1\" }, {
\"name\": \"Policy2\" }, { \"name\": \"Policy3\" } ], \"users\": [ {
\"name\": \"User1\" }, { \"name\": \"User2\" }, { \"name\": \"User3\" }
]}"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 289
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "comment": "Admin group",
    "id": 5,
    "name": "Admin-Group",
    "policies": [
      { "name": "Policy1" },
      { "name": "Policy2" },
      { "name": "Policy3" }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "users": [
      { "name": "User1" },
      { "name": "User2" },
      { "name": "User3" }
    ]
  }
]
}
```

Updating an S3 group for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/groups/{group_id}:

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/groups/5" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"comment\": \"Admin group\", \"name\": \"Admin-
Group\", \"policies\": [ { \"name\": \"Policy1\" } ], \"users\": [ {
\"name\": \"user-1\" } ]}"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
```

Deleting an S3 group for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/groups/{group_id}:

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/groups/5" -H "accept: application/json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
```

Retrieve an S3 group configuration

GET `/protocols/s3/services/{svm.uuid}/groups`

Introduced In: 9.8

Retrieves the S3 group's SVM configuration.

Related ONTAP commands

- `vserver object-store-server group show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/groups

Parameters

Name	Type	In	Required	Description
users.name	string	query	False	Filter by users.name • maxLength: 64 • minLength: 1
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
id	integer	query	False	Filter by id
name	string	query	False	Filter by name • maxLength: 128 • minLength: 1
policies.name	string	query	False	Filter by policies.name • maxLength: 128 • minLength: 1
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "comment": "Admin group",
      "id": 5,
      "name": "Admin-Group",
      "policies": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "Policy1"
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "users": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "user-1"
        }
      ]
```

```
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

policies

Name	Type	Description
_links	_links	
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
_links	_links	
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

s3_group

This is a container for S3 user groups.

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	Specifies the list of users who belong to the group.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 group configuration

POST `/protocols/s3/services/{svm.uuid}/groups`

Introduced In: 9.8

Creates the S3 group configuration.

Important notes

- Each SVM can have one or more s3 group configurations.

Required properties

- `svm.uuid` - Existing SVM in which to create the user configuration.
- `name` - Group name that is to be created.
- `users` - List of users to be added into the group.
- `policies` - List of policies are to be attached to this group.

Recommended optional properties

- `comment` - Short description about the S3 Group.

Related ONTAP commands

- `vserver object-store-server group create`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/groups

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
users	array[users]	Specifies the list of users who belong to the group.

Example request

```
{
  "comment": "Admin group",
  "id": 5,
  "name": "Admin-Group",
  "policies": [
    {
      "name": "Policy1"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "name": "user-1"
    }
  ]
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_group]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "comment": "Admin group",
      "id": 5,
      "name": "Admin-Group",
      "policies": [
        {
          "name": "Policy1"
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "users": [
        {
          "name": "user-1"
        }
      ]
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405896 +	Users list cannot be empty.
92405930 +	Group name "{group name}" is not valid. Group names must have between 1 and 128 characters.

Error Code	Description
92405931 +	Group name "{group name}" contains invalid characters. Valid characters for a group name are 0-9, A-Z, a-z, "_", "+", "=", ",", ".", "@", and "-".
92405932 +	Creating an object store group requires an effective cluster version of 9.8 or later.
92405933 +	Failed to create group for SVM. Reason: "{reason of failure}".
92405934 +	Users {user name} specified in the user list do not exist for SVM "{vserver name}". Use the "object-store-server user create" command to create a user.
92405935 +	Internal Error. Unable to generate unique ID for the group.
92405936 +	Query characters such as * are not supported in the user list.
92405937 +	Policies {policy name} specified in the policy list do not exist for SVM "{vserver name}".
92405942 +	Group name "{group name}" already exists for SVM "{vserver name}".
92405858 +	Failed to "create" the "group" because the operation is only supported on data SVMs.
262222 +	User name is present more than once in the users field.
92406154 +	Users {user} specified in the user list do not exist for SVM "vs1". Use the "/protocols/s3/services/{svm.uuid}/users" endpoint to create a user.
92406307 +	Cannot add object store user "user1" in SVM "vs1" to the group. Reason: The user is disabled, because it does not have keys generated.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

policies

Name	Type	Description
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

s3_group

This is a container for S3 user groups.

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	Specifies the list of users who belong to the group.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 group configuration for an SVM

DELETE `/protocols/s3/services/{svm.uuid}/groups/{id}`

Introduced In: 9.8

Deletes the S3 group configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server group delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/groups

Parameters

Name	Type	In	Required	Description
id	string	path	True	Group identifier that identifies the unique group.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an S3 group configuration for an SVM

GET `/protocols/s3/services/{svm.uuid}/groups/{id}`

Introduced In: 9.8

Retrieves the S3 group configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server group show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/groups

Parameters

Name	Type	In	Required	Description
id	string	path	True	Group identifier that identifies the unique group.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.

Name	Type	Description
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	Specifies the list of users who belong to the group.

Example response


```
{
  "comment": "Admin group",
  "id": 5,
  "name": "Admin-Group",
  "policies": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "Policy1"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "user-1"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

policies

Name	Type	Description
_links	_links	
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an S3 group configuration for an SVM

PATCH `/protocols/s3/services/{svm.uuid}/groups/{id}`

Introduced In: 9.8

Updates the S3 group configuration of an SVM.

Important notes

- The following fields can be modified for a group:
- `name` - Group name that needs to be modified.
- `users` - List of users present in the group.
- `policies` - List of policies to be attached to this group.

Recommended optional properties

- `comment` - Short description about the S3 Group.

Related ONTAP commands

- `vserver object-store-server group modify`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/groups

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Group identifier that identifies the unique group.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

Name	Type	Description
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	Specifies the list of users who belong to the group.

Example request

```
{
  "comment": "Admin group",
  "id": 5,
  "name": "Admin-Group",
  "policies": [
    {
      "name": "Policy1"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "users": [
    {
      "name": "user-1"
    }
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405896 +	Users list cannot be empty.
92405930 +	Group name "{group name}" is not valid. Group names must have between 1 and 128 characters.
92405931 +	Group name "{group name}" contains invalid characters. Valid characters for a group name are 0-9, A-Z, a-z, "_", "+", "=", ",", ".", "@", and "-".
92405934 +	Users {user name} specified in the user list do not exist for SVM "{vserver name}". Use the "object-store-server user create" command to create a user.
92405936 +	Query characters such as * are not supported in the user list.
92405937 +	Policies {policy name} specified in the policy list do not exist for SVM "{vserver name}".
262222 +	User name is present more than once in the users field.
2621706 +	The specified "{svm.uuid}" and "{svm.name}" refer to different SVMs.
92406154 +	Users {user} specified in the user list do not exist for SVM "vs1". Use the "/protocols/s3/services/{svm.uuid}/users" endpoint to create a user.
92406307 +	Cannot add object store user "user1" in SVM "vs1" to the group. Reason: The user is disabled, because it does not have keys generated.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

policies

Name	Type	Description
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

s3_group

This is a container for S3 user groups.

Name	Type	Description
comment	string	Can contain any additional information about the group being created or modified.
id	integer	Specifies a unique Group ID used to identify a particular group. This parameter should not be specified in the POST or PATCH method. A Group ID is automatically generated and it is retrieved using the GET method. Group ID is SVM-scoped.
name	string	Specifies the name of the group. A group name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
policies	array[policies]	Specifies a list of policies that are attached to the group. The wildcard character "*" is a valid value for specifying all policies.
svm	svm	SVM, applies only to SVM-scoped objects.
users	array[users]	Specifies the list of users who belong to the group.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve S3 protocol historical performance metrics

GET `/protocols/s3/services/{svm.uuid}/metrics`

Introduced In: 9.8

Retrieves historical performance metrics for the S3 protocol of an SVM.

Parameters

Name	Type	In	Required	Description
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
timestamp	string	query	False	Filter by timestamp
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write

Name	Type	In	Required	Description
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
svm.uuid	string	path	True	Unique identifier of the SVM.
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8586226	UUID not found.
8585947	There are no entries matching your query.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 service policies

Protocols S3 services svm.uuid policies endpoint overview

Overview

An S3 policy is an object that when associated with a resource, defines their permissions. Buckets and objects are defined as resources. Policies are used to manage access to these resources.

Examples

Retrieving all fields for all S3 policies of an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/policies:

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-
0050568ea123/policies?fields=*&return_records=true&return_timeout=15" -H
"accept: application/json"

# The response:
{
"num_records": 2,
"records": [
  {
```

```
    "comment": "S3 policy.",
    "name": "Policy1",
    "statements": [
      {
        "actions": [
          "*"
        ],
        "effect": "allow",
        "index": 0,
        "resources": [
          "bucket1",
          "bucket1/*"
        ],
        "sid": "FullAccessToBucket1"
      },
      {
        "actions": [
          "DeleteObject"
        ],
        "effect": "deny",
        "index": 1,
        "resources": [
          "*"
        ],
        "sid": "DenyDeleteObjectAccessToAllResources"
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
  },
  {
    "comment": "S3 policy 2.",
    "name": "Policy2",
    "statements": [
      {
        "actions": [
          "GetObject"
        ],
        "effect": "allow",
        "index": 3,
        "resources": [
          "*"
        ],
        "sid": "AllowGetObjectAccessToAllResources"
```

```
      },
      {
        "actions": [
          "*"
        ],
        "effect": "deny",
        "index": 3,
        "resources": [
          "*"
        ],
        "sid": "DenyAccessToAllResources"
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
  }
]
}
```


Retrieving the specified policy in the SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/policies/{name}:

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/policies/Policy1?fields=*" -H "accept:
application/json"

# The response:
{
"comment": "S3 policy.",
"name": "Policy1",
"statements": [
  {
    "actions": [
      "GetObject",
      "PutObject",
      "DeleteObject",
      "ListBucket",
      "ListMyBuckets",
      "ListBucketMultipartUploads",
      "ListMultipartUploadParts",
      "GetObjectTagging",
      "PutObjectTagging",
      "DeleteObjectTagging",
      "GetBucketVersioning",
      "PutBucketVersioning"
    ],
    "effect": "deny",
    "index": 0,
    "resources": [
      "*"
    ],
    "sid": "DenyAccessToAllResources"
  }
],
"svm": {
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
}
```

Creating an S3 policy for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/policies

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/policies?return_records=true" -H "accept:
application/json" -H "authorization: Basic YWRtaW46bmV0YXBwMSE=" -H
"Content-Type: application/json" -d "{ \"comment\": \"S3 policy.\",
\"name\": \"Policy1\", \"statements\": [ { \"actions\": [ \"ListBucket\",
\"ListMyBuckets\", \"CreateBucket\", \"DeleteBucket\" ], \"effect\":
\"allow\", \"resources\": [ \"*\" ], \"sid\":
\"AllowListAccessToAllResources\" } ]}"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 289
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "comment": "S3 policy.",
    "name": "Policy1",
    "statements": [
      {
        "actions": [
          "ListBucket",
          "ListMyBuckets"
        ],
        "effect": "allow",
        "index": 5,
        "resources": [
          "*"
        ],
        "sid": "AllowListAccessToAllResources"
      }
    ],
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
```

```
]
}
```

Updating an S3 policy for an SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/policies/{name}:

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/policies/Policy1" -H "accept: application/json" -H
"authorization: Basic YWRtaW46bmV0YXBwMSE=" -H "Content-Type:
application/json" -d "{ \"comment\": \"S3 policy.\", \"statements\": [ {
\"actions\": [ \"GetObject\", \"PutObject\", \"DeleteObject\",
\"ListBucket\", \"ListMyBuckets\", \"CreateBucket\", \"DeleteBucket\"],
\"effect\": \"allow\", \"resources\": [ \"bucket1\", \"bucket1/*\" ],
\"sid\": \"FullAccessToAllResources\" } ]}"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
```

Deleting an S3 policy for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/policies/{name}:

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/12f3ba4c-7ae0-
11e9-8c06-0050568ea123/policies/Policy1" -H "accept: application/json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 16 Mar 2020 11:32:27 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
```

Retrieve the S3 policies in an SVM configuration

GET `/protocols/s3/services/{svm.uuid}/policies`

Introduced In: 9.8

Retrieves the S3 policies SVM configuration.

Related ONTAP commands

- `vserver object-store-server policy show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
statements.effect	string	query	False	Filter by statements.effect
statements.actions	string	query	False	Filter by statements.actions
statements.resources	string	query	False	Filter by statements.resources

Name	Type	In	Required	Description
statements.sid	string	query	False	Filter by statements.sid • maxLength: 256 • minLength: 0
statements.index	integer	query	False	Filter by statements.index
svm.name	string	query	False	Filter by svm.name
name	string	query	False	Filter by name • maxLength: 128 • minLength: 1
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
read-only	boolean	query	False	Filter by read-only
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "comment": "S3 policy.",
      "name": "Policy1",
      "statements": [
        {
          "actions": [
            "*"
          ],
          "effect": "allow",
          "index": 0,
          "resources": [
            "bucket1",
            "bucket1/*"
          ],
          "sid": "FullAccessToBucket1"
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

s3_policy_statement

Specifies information about a single access policy statement.

Name	Type	Description
actions	array[string]	For each resource, S3 supports a set of operations. The resource operations allowed or denied are identified by an action list: • GetObject - retrieves objects from a bucket. • PutObject - puts objects in a bucket. • DeleteObject - deletes objects from a bucket. • ListBucket - lists the objects in a bucket. • GetBucketAcl - retrieves the access control list (ACL) of a bucket. • GetObjectAcl - retrieves the access control list (ACL) of an object. • ListAllMyBuckets - lists all of the buckets in a server. • ListBucketMultipartUploads - lists the multipart uploads in progress for a bucket. • ListMultipartUploadParts - lists the parts in a multipart upload. • CreateBucket - creates a new bucket. • DeleteBucket - deletes an existing bucket. • GetObjectTagging - retrieves the tag set of an object. • PutObjecttagging - sets the tag set for an object. • DeleteObjectTagging - deletes the tag set of an object. • GetBucketLocation - retrieves the location of a bucket. • GetBucketVersioning - retrieves the versioning configuration of a bucket. • PutBucketVersioning - modifies the versioning configuration of a bucket. ListBucketVersions - lists the object versions in a bucket.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
index	integer	Specifies a unique statement index used to identify a particular statement. This parameter should not be specified in the POST method. A statement index is automatically generated. It is not retrieved in the GET method.
resources	array[string]	
sid	string	Specifies the statement identifier which contains additional information about the statement.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_policy

An S3 policy is an object. It defines resource (bucket, folder or object) permissions. These policies get evaluated when an object store user user makes a request. Permissions in the policies determine

whether the request is allowed or denied.

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-". It cannot be specified in a PATCH method.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 policy configuration

POST `/protocols/s3/services/{svm.uuid}/policies`

Introduced In: 9.8

Creates the S3 policy configuration.

Important notes

- Each SVM can have one or more s3 policy configurations.

Required properties

- `svm.uuid` - Existing SVM in which to create the s3 policy configuration.
- `name` - Policy name that is to be created.

Recommended optional properties

- `comment` - Short description about the S3 policy.
- `statements.effect` - Indicates whether to allow or deny access.
- `statements.actions` - List of actions that can be allowed or denied access. Example: GetObject, PutObject, DeleteObject, ListBucket, ListMyBuckets, ListBucketMultipartUploads, ListMultipartUploadParts, CreateBucket, DeleteBucket, GetObjectTagging, PutObjectTagging, DeleteObjectTagging, GetBucketVersioning, PutBucketVersioning.
- `statements.resources` - Buckets or objects that can be allowed or denied access.
- `statements.sid` - Statement identifier providing additional information about the statement.

Related ONTAP commands

- `vserver object-store-server policy create`
- `vserver object-store-server policy add-statement`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-". It cannot be specified in a PATCH method.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "comment": "S3 policy.",
  "name": "Policy1",
  "statements": [
    {
      "actions": [
        "*"
      ],
      "effect": "allow",
      "index": 0,
      "resources": [
        "bucket1",
        "bucket1/*"
      ],
      "sid": "FullAccessToBucket1"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_policy]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "comment": "S3 policy.",
      "name": "Policy1",
      "statements": [
        {
          "actions": [
            "*"
          ],
          "effect": "allow",
          "index": 0,
          "resources": [
            "bucket1",
            "bucket1/*"
          ],
          "sid": "FullAccessToBucket1"
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405906 +	The specified action name is invalid.
92405947 +	Creating an object store server policy or statement requires an effective cluster version of 9.8 or later.
92405948 +	Policy name is not valid. Policy names must have between 1 and 128 characters.
92405949 +	Policy name contains invalid characters. Valid characters: 0-9, A-Z, a-z, "_", "+", "=", ",", ".", "@", and "-".
92405950 +	Policy name already exists for SVM.
92405954 +	Policy name is reserved for read-only policies. Cannot be used for custom policy creation.
92405963 +	Failed to create policy statements for policy. Reason: "{reason of failure}". Resolve all issues and retry the operation.
92405863 +	Failed to create s3 policy statements. Reason: "{reason of failure}". Valid ways to specify a resource are "__", "{bucket-name}", "{bucket-name}/…/…".". Resolve all the issues and retry the operation.

Definitions

See Definitions

s3_policy_statement

Specifies information about a single access policy statement.

Name	Type	Description
actions	array[string]	For each resource, S3 supports a set of operations. The resource operations allowed or denied are identified by an action list: • GetObject - retrieves objects from a bucket. • PutObject - puts objects in a bucket. • DeleteObject - deletes objects from a bucket. • ListBucket - lists the objects in a bucket. • GetBucketAcl - retrieves the access control list (ACL) of a bucket. • GetObjectAcl - retrieves the access control list (ACL) of an object. • ListAllMyBuckets - lists all of the buckets in a server. • ListBucketMultipartUploads - lists the multipart uploads in progress for a bucket. • ListMultipartUploadParts - lists the parts in a multipart upload. • CreateBucket - creates a new bucket. • DeleteBucket - deletes an existing bucket. • GetObjectTagging - retrieves the tag set of an object. • PutObjecttagging - sets the tag set for an object. • DeleteObjectTagging - deletes the tag set of an object. • GetBucketLocation - retrieves the location of a bucket. • GetBucketVersioning - retrieves the versioning configuration of a bucket. • PutBucketVersioning - modifies the versioning configuration of a bucket. ListBucketVersions - lists the object versions in a bucket.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
index	integer	Specifies a unique statement index used to identify a particular statement. This parameter should not be specified in the POST method. A statement index is automatically generated. It is not retrieved in the GET method.
resources	array[string]	
sid	string	Specifies the statement identifier which contains additional information about the statement.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_policy

An S3 policy is an object. It defines resource (bucket, folder or object) permissions. These policies get evaluated when an object store user user makes a request. Permissions in the policies determine

whether the request is allowed or denied.

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-". It cannot be specified in a PATCH method.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.
svm	svm	SVM, applies only to SVM-scoped objects.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 policy configuration

DELETE `/protocols/s3/services/{svm.uuid}/policies/{name}`

Introduced In: 9.8

Deletes the S3 policy configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server policy delete`
- `vserver object-store-server policy delete-statement`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	Policy name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405858 +	Failed to "delete" the "policy" because the operation is only supported on data SVMs.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an S3 policy configuration

GET `/protocols/s3/services/{svm.uuid}/policies/{name}`

Introduced In: 9.8

Retrieves the S3 policy configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server policy show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	Policy name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
name	string	Specifies the name of the policy. A policy name length can range from 1 to 128 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-". It cannot be specified in a PATCH method.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "comment": "S3 policy.",
  "name": "Policy1",
  "statements": [
    {
      "actions": [
        "*"
      ],
      "effect": "allow",
      "index": 0,
      "resources": [
        "bucket1",
        "bucket1/*"
      ],
      "sid": "FullAccessToBucket1"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

s3_policy_statement

Specifies information about a single access policy statement.

Name	Type	Description
actions	array[string]	For each resource, S3 supports a set of operations. The resource operations allowed or denied are identified by an action list: • GetObject - retrieves objects from a bucket. • PutObject - puts objects in a bucket. • DeleteObject - deletes objects from a bucket. • ListBucket - lists the objects in a bucket. • GetBucketAcl - retrieves the access control list (ACL) of a bucket. • GetObjectAcl - retrieves the access control list (ACL) of an object. • ListAllMyBuckets - lists all of the buckets in a server. • ListBucketMultipartUploads - lists the multipart uploads in progress for a bucket. • ListMultipartUploadParts - lists the parts in a multipart upload. • CreateBucket - creates a new bucket. • DeleteBucket - deletes an existing bucket. • GetObjectTagging - retrieves the tag set of an object. • PutObjecttagging - sets the tag set for an object. • DeleteObjectTagging - deletes the tag set of an object. • GetBucketLocation - retrieves the location of a bucket. • GetBucketVersioning - retrieves the versioning configuration of a bucket. • PutBucketVersioning - modifies the versioning configuration of a bucket. ListBucketVersions - lists the object versions in a bucket.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
index	integer	Specifies a unique statement index used to identify a particular statement. This parameter should not be specified in the POST method. A statement index is automatically generated. It is not retrieved in the GET method.
resources	array[string]	
sid	string	Specifies the statement identifier which contains additional information about the statement.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an S3 policy configuration

PATCH `/protocols/s3/services/{svm.uuid}/policies/{name}`

Introduced In: 9.8

Updates the S3 policy configuration of an SVM.

Important notes

- The following fields can be modified for a policy:
  - `comment` - Any information related to the policy.
  - `statements` - Specifies the array of policy statements.

Related ONTAP commands

- `vserver object-store-server policy modify`
- `vserver object-store-server policy modify-statement`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/policies

Parameters

Name	Type	In	Required	Description
name	string	path	True	Policy name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "comment": "S3 policy.",
  "statements": [
    {
      "actions": [
        "*"
      ],
      "effect": "allow",
      "index": 0,
      "resources": [
        "bucket1",
        "bucket1/*"
      ],
      "sid": "FullAccessToBucket1"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405906 +	The specified action name is invalid.
92405963 +	Failed to create s3 policy statements "{policy name}". Reason: "{reason of failure}". Resolve all issues and retry the operation.
92405953 +	Object store server read-only policies do not support create, modify, delete, add-statement, remove-statement and modify-statement operations.

Error Code	Description
92406075 +	Failed to modify policy statement for policy "{policy name}". Reason: "{reason of failure}". Valid ways to specify a resource are "__", "{bucket-name}", "{bucket-name}/…/…".".

Definitions

See Definitions

s3_policy_statement

Specifies information about a single access policy statement.

Name	Type	Description
actions	array[string]	For each resource, S3 supports a set of operations. The resource operations allowed or denied are identified by an action list: • GetObject - retrieves objects from a bucket. • PutObject - puts objects in a bucket. • DeleteObject - deletes objects from a bucket. • ListBucket - lists the objects in a bucket. • GetBucketAcl - retrieves the access control list (ACL) of a bucket. • GetObjectAcl - retrieves the access control list (ACL) of an object. • ListAllMyBuckets - lists all of the buckets in a server. • ListBucketMultipartUploads - lists the multipart uploads in progress for a bucket. • ListMultipartUploadParts - lists the parts in a multipart upload. • CreateBucket - creates a new bucket. • DeleteBucket - deletes an existing bucket. • GetObjectTagging - retrieves the tag set of an object. • PutObjecttagging - sets the tag set for an object. • DeleteObjectTagging - deletes the tag set of an object. • GetBucketLocation - retrieves the location of a bucket. • GetBucketVersioning - retrieves the versioning configuration of a bucket. • PutBucketVersioning - modifies the versioning configuration of a bucket. ListBucketVersions - lists the object versions in a bucket.

Name	Type	Description
effect	string	Specifies whether access is allowed or denied. If access (to allow) is not granted explicitly to a resource, access is implicitly denied. Access can also be denied explicitly to a resource, in order to make sure that a user cannot access it, even if a different policy grants access.
index	integer	Specifies a unique statement index used to identify a particular statement. This parameter should not be specified in the POST method. A statement index is automatically generated. It is not retrieved in the GET method.
resources	array[string]	
sid	string	Specifies the statement identifier which contains additional information about the statement.

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_policy

An S3 policy is an object. It defines resource (bucket, folder or object) permissions. These policies get evaluated when an object store user user makes a request. Permissions in the policies determine

whether the request is allowed or denied.

Name	Type	Description
comment	string	Can contain any additional information about the S3 policy.
read-only	boolean	Specifies whether or not the s3 policy is read only. This parameter should not be specified in the POST method.
statements	array[s3_policy_statement]	Specifies the policy statements.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage S3 service users

Protocols S3 services svm.uuid users endpoint overview

Overview

An S3 user account is created on the S3 server. Buckets that are created for the server are associated with that user (as the owner of the buckets).
The creation of the user account involves generating a pair of keys "access" and "secret".
These keys are shared with clients (by the administrator out of band) who want to access the S3 server. The

access_key is sent in the request and it identifies the user performing the operation. The client or server never send the secret_key over the wire.
Only the access_key can be retrieved from a GET operation. The secret_key along with the access_key is returned from a POST operation and from a PATCH operation if the administrator needs to regenerate the keys.
If the user is part of active-directory, the user name takes the format "user@fully_qualified_domain_name".

Examples

Retrieving S3 user configurations for a particular SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users?fields=*&return_records=true" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "db2ec036-8375-11e9-99e1-0050568e3ed9",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/db2ec036-8375-11e9-99e1-0050568e3ed9"
        }
      }
    },
    "name": "user-1",
    "comment": "S3 user",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "key_time_to_live": "PT3H5M",
    "key_expiry_time": "2023-11-13T23:28:03+05:30",
    "id": 3,
    "keys": [
      {
        "id": 1,
        "access_key": "FAKEACCESSKEYFAKEAC1",
        "time_to_live": "PT3H5M",
        "expiry_time": "2023-11-13T23:28:03+05:30"
      },
      {
        "id": 2,
```

```
        "access_key": "FAKEACCESSKEYFAKEAC2",
        "time_to_live": "PT6H3M2S",
        "expiry_time": "2023-11-13T23:24:41+05:30"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-1"
      }
    }
  },
  {
    "svm": {
      "uuid": "db2ec036-8375-11e9-99e1-0050568e3ed9",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/db2ec036-8375-11e9-99e1-0050568e3ed9"
        }
      }
    },
    "name": "user-2",
    "comment": "s3-user",
    "access_key": "FAKEACCESSKEYFAKEAC2",
    "id": 2,
    "keys": [
      {
        "id": 1,
        "access_key": "FAKEACCESSKEYFAKEAC2",
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users?fields=*&return_records=true"
  }
```

```
  }
  }
```

Retrieving the user configuration of a specific S3 user

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users/user-1" -H "accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "db2ec036-8375-11e9-99e1-0050568e3ed9",
  "name": "vs1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/db2ec036-8375-11e9-99e1-0050568e3ed9"
    }
  }
},
"name": "user-1",
"comment": "s3-user",
"access_key": "FAKEACCESSKEYFAKEAC1",
"key_time_to_live": "P6DT1H5M",
"key_expiry_time": "2023-02-20T10:04:31Z",
"id": 3,
"keys": [
  {
    "id": 1,
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "time_to_live": "PT3H5M",
    "expiry_time": "2023-11-13T23:28:03+05:30"
  },
  {
    "id": 2,
    "access_key": "FAKEACCESSKEYFAKEAC2",
    "time_to_live": "PT6H3M2S",
    "expiry_time": "2023-11-13T23:24:41+05:30"
  }
],
"_links": {
  "self": {
    "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-1"
  }
}
}
```

Creating an S3 user configuration

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"name\": \"user-1\"}"

# The response:
HTTP/1.1 201 Created
Date: Fri, 31 May 2019 09:34:25 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-1
Content-Length: 244
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "user-1",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "secret_key": "<secret_key_here>"
  }
]
}
```

Creating an S3 user configuration with key expiration configuration

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"comment\": \"S3 user3\",
\"key_time_to_live\": \"P6DT1H5M\", \"name\": \"user-3\"}"

# The response:
HTTP/1.1 201 Created
Date: Tue, 14 Feb 2023 08:59:31 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Location: /api/protocols/s3/services/6573ac2b-ab66-11ed-b53d-
005056bb4b9b/users/user-3
Content-Length: 337
Content-Type: application/hal+json
Vary: Origin
{
"num_records": 1,
"records": [
  {
    "name": "user-3",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "secret_key": "OXx6J_GkTc94Xx91cYrNBar_OT3BY6lWOHI_HSR5",
    "key_expiry_time": "2023-06-16T12:08:38Z",
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/6573ac2b-ab66-11ed-b53d-
005056bb4b9b/users/user-3"
      }
    }
  }
]
}
```

Creating an S3 user configuration with user keys specified

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users" -H "accept: application/json" -H "Content-
Type: application/json" -d "{  \"access_key\":
\"DUMMYACCESSKEY123456ACV\",  \"comment\": \"S3 user\",
\"key_time_to_live\": \"PT6H3M\",  \"name\": \"user-test\",
\"secret_key\": \"<secret_key_here>\"}"

# The response:
HTTP/1.1 201 Created
Date: Fri, 31 May 2019 09:34:25 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-1
Content-Length: 244
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "name": "user-test",
    "access_key": "DUMMYACCESSKEY123456ACV",
    "secret_key": "<secret_key_here>",
    "key_expiry_time": "2024-02-12T22:36:29+05:30"
  }
]
}
```

Creating an S3 user configuration with a key expiration configuration and where the user is part of Active directory.

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users

# The call:
curl -X POST "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users" -H "accept: application/json" -H "Content-
Type: application/json" -d "{ \"comment\": \"S3 user3\",
\"key_time_to_live\": \"P6DT1H5M\", \"name\": \"user-3@domain1.com\"}"

# The response:
HTTP/1.1 201 Created
Date: Tue, 14 Feb 2023 08:59:31 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Location: /api/protocols/s3/services/6573ac2b-ab66-11ed-b53d-
005056bb4b9b/users/user-3%40domain1.com
Content-Length: 337
Content-Type: application/hal+json
Vary: Origin
{
"num_records": 1,
"records": [
  {
    "name": "user-3@domain1.com",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "secret_key": "OXx6J_GkTc94Xx91cYrNBar_OT3BY6lWOHI_HSR5",
    "key_expiry_time": "2023-06-16T12:08:38Z",
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/6573ac2b-ab66-11ed-b53d-
005056bb4b9b/users/user-3%40domain1.com"
      }
    }
  }
]
}
```

Regenerating first key for a specific S3 user for the specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users/user-2?regenerate_keys=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ }"

# The response:
HTTP/1.1 200 OK
Date: Fri, 31 May 2019 09:55:45 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 391
Content-Type: application/hal+json
{
"num_records": 1,
"records": [
  {
    "name": "user-2",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "secret_key": "<secret_key_here>",
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-2"
      }
    }
  }
]
}
```

Regenerating keys and setting new expiry configuration for a specific S3 user for the specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users/user-2?regenerate_keys=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"key_time_to_live\": \"PT6H3M\" }"

# The response:
HTTP/1.1 200 OK
Date: Fri, 31 May 2019 09:55:45 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 391
Content-Type: application/hal+json
{
"num_records": 1,
"records": [
  {
    "name": "user-2",
    "access_key": "FAKEACCESSKEYFAKEAC1",
    "secret_key": "<secret_key_here>",
    "key_expiry_time": "2023-06-16T16:19:06Z",
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-2"
      }
    }
  }
]
}
```

Regenerating keys by specifying keys in the input

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users/user-2?regenerate_keys=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"access_key\": \"DUMMYACCESSKEY123456ACV\",  \"comment\": \"S3 user\",
\"key_time_to_live\": \"PT6H3M\",  \"secret_key\": \"<secret_key_here>\"}"

# The response:
HTTP/1.1 200 OK
Date: Fri, 31 May 2019 09:55:45 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 391
Content-Type: application/hal+json
{
"num_records": 1,
"records": [
  {
    "name": "user-2",
    "access_key": "DUMMYACCESSKEY123456ACV",
    "secret_key": "<secret_key_here>",
    "key_expiry_time": "2023-06-16T16:19:06Z",
    "_links": {
      "self": {
        "href": "/api/protocols/s3/services/db2ec036-8375-11e9-99e1-
0050568e3ed9/users/user-2"
      }
    }
  }
]
}
```

Deleting first key for a specific S3 user for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/protocols/s3/services/db2ec036-8375-
11e9-99e1-0050568e3ed9/users/user-2?delete_keys=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ }"

# The response:
HTTP/1.1 200 OK
Date: Wed, 08 Feb 2023 13:40:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Length: 3
Content-Type: application/hal+json
Vary: Origin
{
}
```

Deleting the specified S3 user configuration for a specified SVM

```
# The API:
/api/protocols/s3/services/{svm.uuid}/users/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/s3/services/03ce5c36-f269-
11e8-8852-0050568e5298/users/user-2" -H "accept: application/json"
```

Retrieve the SVM configuration for an S3 user

GET `/protocols/s3/services/{svm.uuid}/users`

Introduced In: 9.7

Retrieves the S3 user's SVM configuration.

Related ONTAP commands

- `vserver object-store-server user show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/users

Parameters

Name	Type	In	Required	Description
key_expiry_time	string	query	False	Filter by key_expiry_time • Introduced in: 9.14
key_time_to_live	string	query	False	Filter by key_time_to_live • Introduced in: 9.14
comment	string	query	False	Filter by comment • maxLength: 256 • minLength: 0
name	string	query	False	Filter by name • maxLength: 64 • minLength: 1
access_key	string	query	False	Filter by access_key
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records
records	array[s3_user]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "access_key": "HJAKU28M3SXTE2UXUACV",
      "comment": "S3 user",
      "key_expiry_time": "2023-12-31 19:00:00 -0500",
      "key_time_to_live": "PT6H3M",
      "name": "user-1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.

Name	Type	Description
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an S3 user configuration

POST `/protocols/s3/services/{svm.uuid}/users`

Introduced In: 9.7

Creates the S3 user configuration.

Important notes

- Each SVM can have one or more user configurations.
- If the user is a member of Active directory, the user name takes the format "user@FQDN". For example, "user1@domain1.com".
- If user creation is successful, a user access_key and secret_key is returned as part of the response.
- If user keys have expiry configuration, then "key_expiry_time" is also returned as part of the response.
- User access and secret keys can be specified in the input. If not specified, keys are generated automatically.

Required properties

- `svm.uuid` - Existing SVM in which to create the user configuration.
- `name` - User name that is to be created.

Default property values

- `comment` - ""

Related ONTAP commands

- `vserver object-store-server user create`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/users

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.

Name	Type	Description
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "access_key": "HJAKU28M3SXTE2UXUACV",
  "comment": "S3 user",
  "key_expiry_time": "2023-12-31 19:00:00 -0500",
  "key_time_to_live": "PT6H3M",
  "name": "user-1",
  "secret_key": "dummy_secret_key_1234_abcd_ldjf",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_service_user_post_response]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "access_key": "HJAKU28M3SXTE2UXUACV",
      "key_expiry_time": "2023-12-31 19:00:00 -0500",
      "name": "user-1",
      "secret_key": "BcA_HX6If458llhnx3n1TCO3mg4roCXG0ddYf_cJ"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405787	User name "User#1" contains invalid characters. Valid characters for a user name are 0-9, A-Z, a-z, "_", "+", "=", ",", ".", "@", and "-".
92405788	User name "User01234567890123456789012345678901234567890123456789012345678901234567890123456789012345" is not valid. User names must have between 1 and 64 characters.
92405791	Failed to create access-key and secret-key.
92405817	SVM "{non-data SVM name}" is not a data SVM. Specify a data SVM.
92406083	The maximum supported value for user key expiry configuration is "1095" days.
92406096	The user does not have permission to access the requested resource \"{0}\".

Error Code	Description
92406097	Internal error. The operation configuration is not correct.
92406196	The specified value for the "key_time_to_live" field cannot be greater than the maximum limit specified for the "max_key_time_to_live" field in the object store server.
92406197	Object store user "user-2" must have a non-zero value for the "key_time_to_live" field because the maximum limit specified for the "max_key_time_to_live" field in the object store server is not zero.
92406200	An object store user with the same access-key already exists.
92406201	Missing access-key or secret-key. Either provide both of the keys or none. If not provided, keys are generated automatically.
92406205	The object store user access key contains invalid characters. Valid characters are 0-9 and A-Z.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.

Name	Type	Description
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

collection_links

s3_service_user_post_response

Name	Type	Description
access_key	string	Specifies the access key for the user.
key_expiry_time	string	Specifies the date and time after which the keys expire and are no longer valid.
name	string	The name of the user.

Name	Type	Description
secret_key	string	Specifies the secret key for the user.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an S3 user configuration

DELETE `/protocols/s3/services/{svm.uuid}/users/{name}`

Introduced In: 9.7

Deletes the S3 user configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server user delete`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/users

Parameters

Name	Type	In	Required	Description
name	string	path	True	User name

Name	Type	In	Required	Description
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the S3 user configuration for an SVM

GET `/protocols/s3/services/{svm.uuid}/users/{name}`

Introduced In: 9.7

Retrieves the S3 user configuration of an SVM.

Related ONTAP commands

- `vserver object-store-server user show`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/users

Parameters

Name	Type	In	Required	Description
name	string	path	True	User name
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
name	string	Specifies the name of the user. A user name length can range from 1 to 64 characters and can only contain the following combination of characters 0-9, A-Z, a-z, "_", "+", "=", ",", ".","@", and "-".

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "access_key": "HJAKU28M3SXTE2UXUACV",
  "comment": "S3 user",
  "key_expiry_time": "2023-12-31 19:00:00 -0500",
  "key_time_to_live": "PT6H3M",
  "name": "user-1",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an S3 user configuration

PATCH `/protocols/s3/services/{svm.uuid}/users/{name}`

Introduced In: 9.7

Updates the S3 user configuration of an SVM.

Important notes

- User access_key and secret_key pair can be regenerated using the PATCH operation.
- User access_key and secret_key is returned in a PATCH operation if the "regenerate_keys" field is specified as true.
- If "regenerate_keys" is true and user keys have expiry configuration, then "key_expiry_time" is also returned as part of response.
- User access_key and secret_key pair can be deleted using the PATCH operation.

Recommended optional properties

- `regenerate_keys` - Specifies if secret_key and access_key need to be regenerated.
- `delete_keys` - Specifies if secret_key and access_key need to be deleted.
- `comment` - Any information related to the S3 user.

Related ONTAP commands

- `vserver object-store-server user show`
- `vserver object-store-server user regenerate-keys`
- `vserver object-store-server user delete-keys`

Learn more

- DOC /protocols/s3/services/{svm.uuid}/users

Parameters

Name	Type	In	Required	Description
name	string	path	True	User name
regenerate_keys	boolean	query	False	Specifies whether or not to regenerate the user keys. • Default value:

Name	Type	In	Required	Description
delete_keys	boolean	query	False	Specifies whether or not to delete the user keys. • Introduced in: 9.14 • Default value:
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.

Name	Type	Description
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "access_key": "HJAKU28M3SXTE2UXUACV",
  "comment": "S3 user",
  "key_expiry_time": "2023-12-31 19:00:00 -0500",
  "key_time_to_live": "PT6H3M",
  "secret_key": "dummy_secret_key_1234_abcd_ldjf",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
num_records	integer	Number of records
records	array[s3_service_user_post_response]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "access_key": "HJAKU28M3SXTE2UXUACV",
      "key_expiry_time": "2023-12-31 19:00:00 -0500",
      "name": "user-1",
      "secret_key": "BcA_HX6If458llhnx3n1TCO3mg4roCXG0ddYf_cJ"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
92405792	Failed to regenerate access-key and secret-key for user.
92406082	Cannot perform "regenerate_keys" and "delete_keys" operations simultaneously on an S3 user.
92406081	The "regenerate_keys" operation on S3 User "user-2" in SVM "vs1" succeeded. However, modifying all of the other S3 user properties failed. Reason: resource limit exceeded. Retry the operation again without specifying the "regenerate_keys" parameter.
92406080	Cannot delete root user keys because there exists at least one S3 SnapMirror relationship that is using these keys.
92406083	The maximum supported value for user key expiry configuration is "1095" days.
92406088	The "key_time_to_live" parameter can only be used when the "regenerate_keys" operation is performed.
92406096	The user does not have permission to access the requested resource \"{0}\".
92406097	Internal error. The operation configuration is not correct.

Error Code	Description
92406196	The specified value for the "key_time_to_live" field cannot be greater than the maximum limit specified for the "max_key_time_to_live" field in the object store server.
92406197	Object store user "user-2" must have a non-zero value for the "key_time_to_live" field because the maximum limit specified for the "max_key_time_to_live" field in the object store server is not zero.
92406200	An object store user with the same access-key already exists.
92406201	Missing access-key or secret-key. Either provide both of the keys or none. If not provided, keys are generated automatically.
92406202	The "delete_keys" operation must be performed without specifying the user keys.
92406205	The object store user access key contains invalid characters. Valid characters are 0-9 and A-Z.
92406308	Cannot disable user "user1" in SVM "vs1" because the user belongs to at least one object store group. Remove the user from all groups before disabling the user.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

s3_user

This is a container of S3 users.

Name	Type	Description
access_key	string	Specifies the access key for the user.
comment	string	Can contain any additional information about the user being created or modified.
key_expiry_time	string	Specifies the date and time after which keys expire and are no longer valid.

Name	Type	Description
key_time_to_live	string	Indicates the time period from when this parameter is specified: • when creating or modifying a user or • when the user keys were last regenerated, after which the user keys expire and are no longer valid. • Valid format is: 'PnDTnHnMnS|PnW'. For example, P2DT6H3M10S specifies a time period of 2 days, 6 hours, 3 minutes, and 10 seconds. • If the value specified is '0' seconds, then the keys won't expire.
secret_key	string	Specifies the secret key for the user.
svm	svm	SVM, applies only to SVM-scoped objects.

collection_links

s3_service_user_post_response

Name	Type	Description
access_key	string	Specifies the access key for the user.
key_expiry_time	string	Specifies the date and time after which the keys expire and are no longer valid.
name	string	The name of the user.
secret_key	string	Specifies the secret key for the user.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

SAN

SAN overview

Overview

The storage area network (SAN) endpoints and objects enable you to configure, provision, and manage SAN-related objects.

Fibre Channel

Logins

Fibre Channel logins represent connections, formed by Fibre Channel initiators, that have successfully logged in to ONTAP. This represents the Fibre Channel login on which higher-level protocols, such as Fibre Channel Protocol (FCP) and Non-Volatile Memory Express over Fibre Channel (NVMe over FC), rely.

The Fibre Channel logins REST API provides information about active Fibre Channel logins.

WWPN Aliases

A WWPN (world wide port name) is a unique 64-bit identifier for a Fibre Channel initiator. It is displayed as a 16-character hexadecimal value. SAN administrators may find it easier to identify Fibre Channel initiators using an alias, especially in larger SANs.

The WWPN alias REST API allows you to create, delete and discover aliases for WWPNs.

Services

A Fibre Channel Protocol (FCP) service defines the properties of the Fibre Channel Protocol target for an SVM. There can be at most one FCP service for a given SVM. An SVM's FCP service must be created before FCP initiators can login to the SVM.

The Fibre Channel Protocol (FCP) service REST API allows you to create, update, delete, and discover Fibre Channel Services for SVMs.
Fibre Channel interfaces are the logical endpoints for Fibre Channel network connections to an SVM.

---

iSCSI

Credentials

An iSCSI credentials object defines the authentication credentials to be used between an iSCSI initiator and ONTAP. It identifies an authentication type, user names, and the passwords that must be used to authenticate a specific initiator.

The iSCSI credentials REST API allows you to create, update, delete, and discover iSCSI credential objects.

Services

An iSCSI service defines the properties of the iSCSI target for an SVM. There can be at most one iSCSI service for an SVM. An SVM's iSCSI service must be created before iSCSI initiators can login to the SVM.

The iSCSI service REST API allows you to create, update, delete, and discover iSCSI services for SVMs.

Sessions

An iSCSI session consists of one or more TCP connections that link an iSCSI initiator with an iSCSI target. TCP connections can be added and removed from an iSCSI session by the iSCSI initiator. Across all TCP connections within an iSCSI session, an initiator sees one and the same target. After the connection is established, iSCSI control, data, and status messages are communicated over the session.

The iSCSI sessions REST API provides information about iSCSI initiators that have successfully logged in to ONTAP.

Learn More

- *IP Interfaces* found in the *networking* section. IP interfaces are the logical endpoints for iSCSI network connections to an SVM.

Initiator Groups

An initiator group (igroup) is a collection of Fibre Channel WWPNs (world wide port names), iSCSI IQNs (qualified names), iSCSI EUIs (extended unique identifiers), or any combination of these, that identify host initiators.

Initiator groups are used to control which hosts can access specific LUNs. To grant access to a LUN from one or more hosts, a network administrator creates an initiator group containing the hosts' initiator names, and then creates a LUN map that associates the initiator group with the LUN.

The initiator group REST API allows you to create, update, delete, and discover initiator groups. It also enables you to add and remove initiators that can access the target and associated LUNs.

Portsets

A portset is a collection of Fibre Channel Protocol and/or iSCSI network interfaces from the portset's SVM.

Portsets are used to limit the network interfaces through which an initiator can connect to mapped LUNs. When a portset is bound to an initiator group (igroup), and the initiator group is mapped to a LUN, the initiators of the initiator group can only reach the LUN through the network interfaces in the portset.

Portsets are not recommended for new configurations. With modern releases of ONTAP, it is recommended to use multiple SVMs and initiator groups with no bound portset to load balance applications over multiple ports on a node. Selective LUN mapping will automatically limit the number of visible paths to a LUN from the client host to those required for efficient access and high availability. The REST portset API is primarily intended for legacy use.

The portset REST API allows you to create, delete, and discover portsets, and to add and remove network interfaces from portsets.

A portset can be bound to one or more initiator groups. An initiator group (igroup) can be bound to at most one portset.

LUN Maps

A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the group's initiators are granted access to the LUN. The relationship between an initiator group and a LUN is many initiator groups to many LUNs.

The LUN map REST API allows you to create, delete, and discover LUN maps and manage the reporting nodes of a LUN map.

LUNs

A LUN is the logical representation of storage in a storage area network (SAN).

The LUN REST API allows you to create, update, delete, and discover LUNs.

VMware Virtual Volume (vVol) Bindings

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

Class `protocol_endpoint` and `vvol` LUNs support many-to-many vVol bindings. A LUN of one class can be bound to zero or more LUNs of the opposite class.

The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

The vVol binding REST API allows you to create, delete, and discover vVol bindings.

Retrieve FC port information

Network FC logins endpoint overview

Overview

Fibre Channel (FC) logins represent connections formed by FC initiators that have successfully logged in to ONTAP. This represents the FC login on which higher-level protocols such as Fibre Channel Protocol and NVMe over FC (NVMe/FC) rely.

The Fibre Channel logins REST API provides information about active FC logins.

Examples

Retrieving all FC logins

```
# The API:
GET /api/network/fc/logins

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/logins" -H "Accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "056403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/056403da-83a7-4b13-bc78-6a93e8ea3596"
        }
      }
    },
    "interface": {
      "uuid": "01056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif1",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/01056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8b:21:2f:07:00:00:00:00"
```

```
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/01056403-1383-bc4b-786a-
93e8ea35969d/8b%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  },
  {
    "svm": {
      "uuid": "056403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/056403da-83a7-4b13-bc78-6a93e8ea3596"
        }
      }
    },
    "interface": {
      "uuid": "02056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif2",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/02056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8c:21:2f:07:00:00:00:00"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/02056403-1383-bc4b-786a-
93e8ea35969d/8c%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  },
  {
    "svm": {
      "uuid": "156403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/156403da-83a7-4b13-bc78-6a93e8ea3596"
        }
```

```
      }
    },
    "interface": {
      "uuid": "03056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif3",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/00056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8a:21:2f:07:00:00:00:00"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/00056403-1383-bc4b-786a-
93e8ea35969d/8a%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/network/fc/logins"
  }
}
}
```


Retrieving all FC logins with data protocol *fcp* in SVM *svm1*

The `svm.name` and `protocol` query parameters are used to perform the query.

```
# The API:
GET /api/network/fc/logins

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/fc/logins?svm.name=svm1&protocol=fcp" -H "Accept:
application/hal+json"

# The response:
```

```
{
"records": [
  {
    "svm": {
      "uuid": "056403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/056403da-83a7-4b13-bc78-6a93e8ea3596"
        }
      }
    },
    "interface": {
      "uuid": "01056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif2",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/01056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8b:21:2f:07:00:00:00:00"
    },
    "protocol": "fcp",
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/01056403-1383-bc4b-786a-
93e8ea35969d/8b%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  },
  {
    "svm": {
      "uuid": "056403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/056403da-83a7-4b13-bc78-6a93e8ea3596"
        }
      }
    },
    "interface": {
      "uuid": "02056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif3",
```

```
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/02056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8c:21:2f:07:00:00:00:00"
    },
    "protocol": "fcp",
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/02056403-1383-bc4b-786a-
93e8ea35969d/8c%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/fc/logins?svm.name=svm1&protocol=fcp"
  }
}
}
```

Retrieving all FC logins for initiators belonging to *igroup1* and returning all of their properties

The `igroups.name` query parameter is used to perform the query. The `fields` query parameter is used to return all of the properties.

```
# The API:
GET /api/network/fc/logins

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/fc/logins?igroups.name=igroup1&fields=*" -H "Accept:
application/hal+json"

# The response:
{
"records": [
  {
```

```
    "svm": {
      "uuid": "056403da-83a7-4b13-bc78-6a93e8ea3596",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/056403da-83a7-4b13-bc78-6a93e8ea3596"
        }
      }
    },
    "interface": {
      "uuid": "01056403-1383-bc4b-786a-93e8ea35969d",
      "name": "lif2",
      "wwpn": "8b:21:2f:07:00:00:00:00",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/01056403-1383-bc4b-786a-
93e8ea35969d"
        }
      }
    },
    "initiator": {
      "wwpn": "8b:21:2f:07:00:00:00:00",
      "wwnn": "95:21:2f:07:00:00:00:00",
      "comment": "Example information about this initiator"
    },
    "igroups": [
      {
        "uuid": "243bbb8a-46e9-4b2d-a508-a62dc93df9d1",
        "name": "igroup1",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/243bbb8a-46e9-4b2d-a508-
a62dc93df9d1"
          }
        }
      }
    ],
    "port_address": "8aa53",
    "protocol": "fcp",
    "_links": {
      "self": {
        "href": "/api/network/fc/logins/01056403-1383-bc4b-786a-
93e8ea35969d/8b%3A21%3A2f%3A07%3A00%3A00%3A00%3A00"
      }
    }
  }
```

```
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/fc/logins?igroups.name=igroup1&fields=*"
  }
}
}
```


Retrieve FC logins

GET `/network/fc/logins`

Introduced In: 9.6

Retrieves FC logins.

Related ONTAP commands

- `vserver fcp initiator show`

Learn more

- SAN: DOC /network/fc/logins
- NVMe: DOC /network/fc/logins

Parameters

Name	Type	In	Required	Description
protocol	string	query	False	Filter by protocol
igroups.uuid	string	query	False	Filter by igroups.uuid
igroups.name	string	query	False	Filter by igroups.name • maxLength: 96 • minLength: 1
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
interface.wwpn	string	query	False	Filter by interface.wwpn

Name	Type	In	Required	Description
interface.name	string	query	False	Filter by interface.name
interface.uuid	string	query	False	Filter by interface.uuid
initiator.wwpn	string	query	False	Filter by initiator.wwpn
initiator.wwnn	string	query	False	Filter by initiator.wwnn
initiator.port_address	string	query	False	Filter by initiator.port_address
initiator.aliases	string	query	False	Filter by initiator.aliases
initiator.comment	string	query	False	Filter by initiator.comment • Introduced in: 9.9
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[fc_login]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "next": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "igroups": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "initiator": {
        "aliases": [
          "alias1"
        ],
        "comment": "This is an FC initiator for host 5",
        "port_address": "5060A",
        "wwnn": "2f:a0:00:a0:98:0b:56:13",
        "wwpn": "2f:a0:00:a0:98:0b:56:13"
      },
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "fc_lif1",
          "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
          "wwpn": "20:00:00:50:56:b4:13:a8"
        },
        "protocol": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiator

Information about the logged in FC initiator.

Name	Type	Description
aliases	array[string]	The logged in initiator world wide port name (WWPN) aliases.
comment	string	A comment available for use by the administrator. This is modifiable from the initiator REST endpoint directly. See PATCH /protocols/san/igroups/{igroup.uuid}/initiators/{name} .

Name	Type	Description
port_address	string	The port address of the initiator's FC port. Each port in an FC switched fabric has its own unique port address for routing purposes. The port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the initiator port. This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
wwnn	string	The logged in initiator world wide node name (WWNN).
wwpn	string	The logged in initiator WWPN.

interface

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

fc_login

A Fibre Channel (FC) login represents a connection formed by an FC initiator that has successfully logged in to ONTAP. This represents the FC login on which higher-level protocols such as Fibre Channel Protocol and NVMe over Fibre Channel (NVMe/FC) rely.

Name	Type	Description
_links	_links	
igroups	array[igroups]	The initiator groups in which the initiator is a member.
initiator	initiator	Information about the logged in FC initiator.
interface	interface	An FC interface.
protocol	string	The data protocol used to perform the login.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC login

GET `/network/fc/logins/{interface.uuid}/{initiator.wwpn}`

Introduced In: 9.6

Retrieves an FC login.

Related ONTAP commands

- `vserver fcp initiator show`

Learn more

- SAN: DOC /network/fc/logins
- NVMe: DOC /network/fc/logins

Parameters

Name	Type	In	Required	Description
interface.uuid	string	path	True	The unique identifier of the FC interface through which the initiator logged in.
initiator.wwpn	string	path	True	The world wide port name (WWPN) of the initiator.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
igroups	array[igroups]	The initiator groups in which the initiator is a member.
initiator	initiator	Information about the logged in FC initiator.
interface	interface	An FC interface.
protocol	string	The data protocol used to perform the login.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "initiator": {
    "aliases": [
      "alias1"
    ],
    "comment": "This is an FC initiator for host 5",
    "port_address": "5060A",
    "wwnn": "2f:a0:00:a0:98:0b:56:13",
    "wwpn": "2f:a0:00:a0:98:0b:56:13"
  },
  "interface": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "fc_lif1",
    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
    "wwpn": "20:00:00:50:56:b4:13:a8"
  },
  "protocol": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
```

```
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The Fibre Channel login specified does not exist.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5374881	The Fibre Channel interface specified does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiator

Information about the logged in FC initiator.

Name	Type	Description
aliases	array[string]	The logged in initiator world wide port name (WWPN) aliases.
comment	string	A comment available for use by the administrator. This is modifiable from the initiator REST endpoint directly. See PATCH /protocols/san/igroups/{igroup.uuid}/initiators/{name} .

Name	Type	Description
port_address	string	The port address of the initiator's FC port. Each port in an FC switched fabric has its own unique port address for routing purposes. The port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the initiator port. This is useful for obtaining statistics and diagnostic information from FC switches. This is a hexadecimal encoded numeric value.
wwnn	string	The logged in initiator world wide node name (WWNN).
wwpn	string	The logged in initiator WWPN.

interface

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FC WWPN aliases

Network FC wwpn-aliases endpoint overview

Overview

A worldwide port name (WWPN) is a unique 64-bit identifier for a Fibre Channel (FC) initiator. It is displayed as a 16-character hexadecimal value. SAN administrators might find it easier to identify FC initiators using an alias, especially in larger SANs.

The WWPN alias REST API allows you to create, delete, and discover aliases for WWPNs.

Multiple aliases can be created for a WWPN, but you cannot use the same alias for multiple WWPNs.

An alias can consist of up to 32 characters. Valid characters are:

- A through Z

- a through z
- numbers 0 through 9
- hyphen ("-")
- underscore ("_")
- left and right braces ("{", "}")
- period (".")

Examples

Creating a WWPN alias

```
# The API:
POST /api/network/fc/wwpn-aliases

# The call:
curl -X POST "https://<mgmt-ip>/api/network/fc/wwpn-aliases" -H "Accept:
application/json" -d '{ "svm": { "name": "svm1" }, "wwpn":
"50:0a:09:82:b4:30:25:05", "alias": "alias3" }'
```

Retrieving all properties of all WWPN aliases

The `fields` query parameter is used to request that all properties be returned.

```
# The API:
GET /api/network/fc/wwpn-aliases

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/wwpn-aliases?fields=*" -H
"Accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "68589d3d-7efa-11e8-9eed-005056b43025",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/68589d3d-7efa-11e8-9eed-005056b43025"
        }
      }
    },
    "alias": "alias1",
```

```
    "wwpn": "20:00:00:50:56:b4:30:25",
    "_links": {
      "self": {
        "href": "/api/network/fc/wwpn-aliases/68589d3d-7efa-11e8-9eed-
005056b43025/alias1"
      }
    }
  },
  {
    "svm": {
      "uuid": "68589d3d-7efa-11e8-9eed-005056b43025",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/68589d3d-7efa-11e8-9eed-005056b43025"
        }
      }
    },
    "alias": "alias2",
    "wwpn": "50:0a:09:82:b4:30:25:00",
    "_links": {
      "self": {
        "href": "/api/network/fc/wwpn-aliases/68589d3d-7efa-11e8-9eed-
005056b43025/alias2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/fc/wwpn-aliases"
  }
}
}
```

Retrieving all WWPN aliases named "alias1"

The `alias` query parameter is used to specify a query for the value "alias1".

```
# The API:
GET /api/network/fc/wwpn-aliases

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/wwpn-aliases?alias=alias1"
-H "Accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "68589d3d-7efa-11e8-9eed-005056b43025",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/68589d3d-7efa-11e8-9eed-005056b43025"
        }
      }
    },
    "alias": "alias1",
    "wwpn": "20:00:00:50:56:b4:30:25",
    "_links": {
      "self": {
        "href": "/api/network/fc/wwpn-aliases/68589d3d-7efa-11e8-9eed-
005056b43025/alias1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/fc/wwpn-aliases?alias=alias1"
  }
}
}
```

Retrieving a specific WWPN alias

The alias to be returned is identified by the UUID of its SVM and the alias name.

```
# The API:
GET /api/network/fc/wwpn-aliases/{svm.uuid}/{alias}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/wwpn-aliases/68589d3d-7efa-
11e8-9eed-005056b43025/alias2" -H "Accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "68589d3d-7efa-11e8-9eed-005056b43025",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/68589d3d-7efa-11e8-9eed-005056b43025"
        }
      }
    },
    "alias": "alias2",
    "wwpn": "50:0a:09:82:b4:30:25:00",
    "_links": {
      "self": {
        "href": "/api/network/fc/wwpn-aliases/68589d3d-7efa-11e8-9eed-
005056b43025/alias1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/fc/wwpn-aliases?alias=alias1"
  }
}
}
```

Deleting a WWPN alias

The alias to delete is identified by the UUID of its SVM and the alias name.

```
# The API:
DELETE /api/network/fc/wwpn-aliases/{svm.uuid}/{alias}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/fc/wwpn-aliases/68589d3d-
7efa-11e8-9eed-005056b43025/alias2" -H "Accept: application/hal+json"
```

Retrieve FC WWPN aliases

GET `/network/fc/wwpn-aliases`

Introduced In: 9.6

Retrieves FC WWPN aliases.

Related ONTAP commands

- `vserver fcp wwpn-alias show`

Learn more

- DOC /network/fc/wwpn-aliases

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
wwpn	string	query	False	Filter by wwpn
alias	string	query	False	Filter by alias
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[wwpn_alias]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "alias": "host1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "wwpn": "2f:a0:00:a0:98:0b:56:13"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

wwpn_alias

A Fibre Channel (FC) world wide port name (WWPN) alias. A WWPN is a unique 64-bit identifier for an FC initiator. It is displayed as a 16-character hexadecimal value. SAN administrators may find it easier to identify FC initiators using an alias, especially in larger SANs.

Name	Type	Description
_links	_links	
alias	string	The FC WWPN alias. Required in POST.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
wwpn	string	The FC initiator WWPN. Required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an FC WWPN alias

POST `/network/fc/wwpn-aliases`

Introduced In: 9.6

Creates an FC WWPN alias.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the FC alias.
- `alias` - Name of the FC alias.
- `wwpn` - FC WWPN for which to create the alias.

Related ONTAP commands

- `vserver fcp wwpn-alias set`

Learn more

- DOC /network/fc/wwpn-aliases

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
alias	string	The FC WWPN alias. Required in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
wwpn	string	The FC initiator WWPN. Required in POST.

Example request

```
{
  "alias": "host1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "wwpn": "2f:a0:00:a0:98:0b:56:13"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[wwpn_alias]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "alias": "host1",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "wwpn": "2f:a0:00:a0:98:0b:56:13"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The specified SVM does not exist or cannot be accessed by this user.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5374869	The alias already exists.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

wwpn_alias

A Fibre Channel (FC) world wide port name (WWPN) alias. A WWPN is a unique 64-bit identifier for an FC initiator. It is displayed as a 16-character hexadecimal value. SAN administrators may find it easier to identify FC initiators using an alias, especially in larger SANs.

Name	Type	Description
alias	string	The FC WWPN alias. Required in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
wwpn	string	The FC initiator WWPN. Required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FC WWPN alias

DELETE `/network/fc/wwpn-aliases/{svm.uuid}/{alias}`

Introduced In: 9.6

Deletes an FC WWPN alias.

Related ONTAP commands

- `vserver fcp wwpn-alias remove`

Learn more

- DOC /network/fc/wwpn-aliases

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM.
alias	string	path	True	The name of FC WWPN alias.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The specified SVM does not exist or cannot be accessed by this user.
5374046	The alias could not be found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC WWPN alias

GET `/network/fc/wwpn-aliases/{svm.uuid}/{alias}`

Introduced In: 9.6

Retrieves an FC WWPN alias.

Related ONTAP commands

- `vserver fcp wwpn-alias show`

Learn more

- DOC /network/fc/wwpn-aliases

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM in which the alias is found.
alias	string	path	True	The name of FC WWPN alias.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
alias	string	The FC WWPN alias. Required in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
wwpn	string	The FC initiator WWPN. Required in POST.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "alias": "host1",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "wwpn": "2f:a0:00:a0:98:0b:56:13"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The specified SVM does not exist or cannot be accessed by this user.
5374046	The alias could not be found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FC services for SVMs

Protocols SAN fcp services endpoint overview

Overview

A Fibre Channel Protocol (FC Protocol) service defines the properties of the FC Protocol target for an SVM. There can be at most one FC Protocol service for an SVM. An SVM FC Protocol service must be created before FC Protocol initiators can log in to the SVM.

The FC Protocol service REST API allows you to create, update, delete, and discover FC services for SVMs.

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency, and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Creating an FC Protocol service for an SVM

The simplest way to create an FC Protocol service is to specify only the SVM, either by name or UUID. By default, the new FC Protocol service is enabled.

In this example, the `return_records` query parameter is used to retrieve the new FC Protocol service object in the REST response.

```
# The API:
POST /api/protocols/san/fcp/services

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/fcp/services?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "5c659d90-c01a-11e8-88ed-005056bbb24b",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/5c659d90-c01a-11e8-88ed-005056bbb24b"
        }
      }
    },
    "enabled": true,
    "target": {
      "name": "20:00:00:50:56:bb:b2:4b"
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/fcp/services/5c659d90-c01a-11e8-88ed-
005056bbb24b"
      }
    }
  }
]
}
```

Retrieving FC Protocol services for all SVMs in the cluster

```
# The API:
GET /api/protocols/san/fcp/services

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/fcp/services' -H 'Accept:
```

```
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "5c659d90-c01a-11e8-88ed-005056bbb24b",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/5c659d90-c01a-11e8-88ed-005056bbb24b"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/fcp/services/5c659d90-c01a-11e8-88ed-
005056bbb24b"
      }
    }
  },
  {
    "svm": {
      "uuid": "6011f874-c01a-11e8-88ed-005056bbb24b",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6011f874-c01a-11e8-88ed-005056bbb24b"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/fcp/services/6011f874-c01a-11e8-88ed-
005056bbb24b"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/san/fcp/services"
  }
}
```

```
}
```

Retrieving details for a specific FC Protocol service

The FC Protocol service is identified by the UUID of its SVM.

```
# The API:
GET /api/protocols/san/fcp/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/fcp/services/5c659d90-
c01a-11e8-88ed-005056bbb24b' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "5c659d90-c01a-11e8-88ed-005056bbb24b",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5c659d90-c01a-11e8-88ed-005056bbb24b"
    }
  }
},
"enabled": true,
"target": {
  "name": "20:00:00:50:56:bb:b2:4b"
},
"_links": {
  "self": {
    "href": "/api/protocols/san/fcp/services/5c659d90-c01a-11e8-88ed-
005056bbb24b"
  }
}
}
```

Disabling an FC Protocol service

Disabling an FC Protocol service shuts down all active FC Protocol logins for the SVM and prevents new FC Protocol logins.

The FC Protocol service to update is identified by the UUID of its SVM.

```
# The API:
PATCH /api/protocols/san/fcp/services/{svm.uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/protocols/san/fcp/services/5c659d90-
c01a-11e8-88ed-005056bbb24b' -H 'Accept: application/hal+json' -d '{
"enabled": "false" }'
```

You can retrieve the FC Protocol service to confirm the change.

In this example, the `fields` query parameter is used to limit the response to the `enabled` property and FC Protocol service identifiers.

```
# The API:
GET /api/protocols/san/fcp/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/fcp/services/5c659d90-
c01a-11e8-88ed-005056bbb24b?fields=enabled' -H 'Accept:
application/hal+json'

# The response:
{
"svm": {
  "uuid": "5c659d90-c01a-11e8-88ed-005056bbb24b",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5c659d90-c01a-11e8-88ed-005056bbb24b"
    }
  }
},
"enabled": false,
"_links": {
  "self": {
    "href": "/api/protocols/san/fcp/services/5c659d90-c01a-11e8-88ed-
005056bbb24b"
  }
}
}
```

Deleting an FC Protocol service

The FC Protocol service must be disabled before it can be deleted.

The FC Protocol service to delete is identified by the UUID of its SVM.

```
# The API:
DELETE /api/protocols/san/fcp/services/{svm.uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/fcp/services/5c659d90-
c01a-11e8-88ed-005056bbb24b' -H 'Accept: application/hal+json'
```

Retrieve FC protocol services

GET `/protocols/san/fcp/services`

Introduced In: 9.6

Retrieves FC Protocol services.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver fcp show`

Learn more

- DOC /protocols/san/fcp/services

Parameters

Name	Type	In	Required	Description
target.name	string	query	False	Filter by target.name • maxLength: 128 • minLength: 1

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[fcp_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "statistics": {
        "iops_raw": {
```

```
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "name": "20:00:00:50:56:bb:b2:4b"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
name	string	The target name of the FC Protocol service. This is generated for the SVM during POST. The FC Protocol target name is a world wide node name (WWNN). If required, the target name can be modified using the ONTAP command line. • example: 20:00:00:50:56:bb:b2:4b • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

fcp_service

A Fibre Channel (FC) Protocol service defines the properties of the FC Protocol target for an SVM. There can be at most one FC Protocol service for an SVM. An SVM's FC Protocol service must be created before FC Protocol initiators can login to the SVM.

A FC Protocol service is identified by the UUID of its SVM.

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Create an FC protocol service

POST `/protocols/san/fcp/services`

Introduced In: 9.6

Creates an FC Protocol service.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the FC Protocol service.

Related ONTAP commands

- `vserver fcp create`

Learn more

- DOC /protocols/san/fcp/services

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "name": "20:00:00:50:56:bb:b2:4b"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[fcp_service]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "name": "20:00:00:50:56:bb:b2:4b"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127	The cluster lacks a valid FC Protocol license.
2621462	The supplied SVM does not exist.
2621507	The Fibre Channel Protocol is not allowed for the specified SVM.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374082	The Fibre Channel Protocol service already exists for the SVM.

Error Code	Description
5374092	The Fibre Channel Protocol is not supported on the cluster hardware configuration; there are no Fibre Channel adapters.
5374893	The SVM is stopped. The SVM must be running to create a Fibre Channel Protocol service.
5376452	Service POST and DELETE are not supported on ASA r2.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
name	string	The target name of the FC Protocol service. This is generated for the SVM during POST. The FC Protocol target name is a world wide node name (WWNN). If required, the target name can be modified using the ONTAP command line. • example: 20:00:00:50:56:bb:b2:4b • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

fcp_service

A Fibre Channel (FC) Protocol service defines the properties of the FC Protocol target for an SVM. There can be at most one FC Protocol service for an SVM. An SVM's FC Protocol service must be created before FC Protocol initiators can login to the SVM.

A FC Protocol service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an FC protocol service

DELETE `/protocols/san/fcp/services/{svm.uuid}`

Introduced In: 9.6

Deletes an FC Protocol service. An FC Protocol service must be disabled before it can be deleted.

Related ONTAP commands

- `vserver fcp delete`

Learn more

- DOC /protocols/san/fcp/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which to delete the FC Protocol service.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5373960	The Fibre Channel Protocol service cannot be removed while it is enabled.
5374083	There is no Fibre Channel Protocol service for the specified SVM.
5376452	Service POST and DELETE are not supported on ASA r2.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an FC protocol service

GET `/protocols/san/fcp/services/{svm.uuid}`

Introduced In: 9.6

Retrieves an FC Protocol service.

Related ONTAP commands

- `vserver fcp show`

Learn more

- DOC /protocols/san/fcp/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which to retrieve the FC Protocol service.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
```

```
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "name": "20:00:00:50:56:bb:b2:4b"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5374083	There is no Fibre Channel Protocol service for the specified SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
name	string	The target name of the FC Protocol service. This is generated for the SVM during POST. The FC Protocol target name is a world wide node name (WWNN). If required, the target name can be modified using the ONTAP command line. • example: 20:00:00:50:56:bb:b2:4b • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an FC protocol service

PATCH `/protocols/san/fcp/services/{svm.uuid}`

Introduced In: 9.6

Updates an FC Protocol service.

Related ONTAP commands

- `vserver fcp modify`
- `vserver fcp start`
- `vserver fcp stop`

Learn more

- DOC /protocols/san/fcp/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM whose FC Protocol service is to be updated.

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
target	target	

Example request

```
{
  "target": {
    "name": "20:00:00:50:56:bb:b2:4b"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5374083	There is no Fibre Channel Protocol service for the specified SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
name	string	The target name of the FC Protocol service. This is generated for the SVM during POST. The FC Protocol target name is a world wide node name (WWNN). If required, the target name can be modified using the ONTAP command line. • example: 20:00:00:50:56:bb:b2:4b • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

fcp_service

A Fibre Channel (FC) Protocol service defines the properties of the FC Protocol target for an SVM. There can be at most one FC Protocol service for an SVM. An SVM's FC Protocol service must be created before FC Protocol initiators can login to the SVM.

A FC Protocol service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the FC Protocol service. The FC Protocol service can be disabled to block all FC Protocol connectivity to the SVM. This is optional in POST and PATCH. The default setting is *true* (enabled) in POST.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the FC protocol service of an SVM

GET `/protocols/san/fcp/services/{svm.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for the FC Protocol service of an SVM.

Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp

Name	Type	In	Required	Description
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status
svm.uuid	string	path	True	The unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "svm": {
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the FC protocol service of an SVM for a specific time

GET `/protocols/san/fcp/services/{svm.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical performance metrics for the FC Protocol service of an SVM for a specific time.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM.
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "svm": {
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage SAN igroups

Protocols SAN igroups endpoint overview

Overview

An initiator group (igroup) is a collection of Fibre Channel (FC) world wide port names (WWPNs), and/or iSCSI Qualified Names (IQNs), and/or iSCSI EUIs (Extended Unique Identifiers) that identify host endpoints.

Initiator groups are used to control which hosts can access specific LUNs. To grant access to a LUN from one or more hosts, create an initiator group containing the host initiator names, then create a LUN map that associates the initiator group with the LUN.

An initiator group may contain either initiators or other initiator groups, but not both simultaneously. When a parent initiator group is mapped, it inherits all of the initiators of any initiator groups nested below it. If any nested initiator group is modified to contain different initiators, the parent initiator groups inherit the change. A parent can have many nested initiator groups and an initiator group can be nested under multiple parents. Initiators can only be added or removed from the initiator group that directly contains them. The maximum supported depth of nesting is three layers.

Best practice when using nested initiator groups is to match host hierarchies. A single initiator group should correspond to a single host. If a LUN needs to be mapped to multiple hosts, the initiator groups representing those hosts should be aggregated into a parent initiator group and the LUN should be mapped to that initiator group. For multi-ported hosts, initiators have a comment property where the port corresponding to the initiator can be documented.

The initiator group REST API allows you to create, update, delete, and discover initiator groups, and to add and remove initiators that can access the target and associated LUNs.

An initiator can appear in multiple initiator groups. An initiator group can be mapped to multiple LUNs. A specific initiator can be mapped to a specific LUN only once. With the introduction of nestable initiator groups, best practice is to use the hierarchy such that an initiator is only a direct member of a single initiator group, and that initiator group can then be referenced by other initiator groups. This avoid needing to update multiple initiator groups when initiators change.

All initiators or nested initiator groups in an initiator group must be from the same operating system. The initiator group's operating system is specified when the initiator group is created.

When an initiator group is created, the `protocol` property is used to restrict member initiators to Fibre Channel (*fcp*), iSCSI (*iscsi*), or both (*mixed*). Initiator groups within a nested hierarchy may not have conflicting protocols.

Zero or more initiators or nested initiator groups can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. Initiator groups containing other initiator groups report the aggregated list of initiators from all nested initiator groups, but modifications of the initiator list must be performed on the initiator group that directly contains the initiators. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.

An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Examples

Creating an initiator group with no initiators

The example initiator group used here is for Linux iSCSI initiators only. Note that the `return_records` query parameter is used to obtain the newly created initiator group in the response.

```
# The API:
POST /api/protocols/san/igroups

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/igroups?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name": "igroup1",
"os_type": "linux", "protocol": "iscsi" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup1",
    "protocol": "iscsi",
    "os_type": "linux",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  }
]
}
```

Creating an initiator group with initiators

The example initiator group used here is for Windows. FC Protocol and iSCSI initiators are allowed. Note that the `return_records` query parameter is used to obtain the newly created initiator group in the response.

```
# The API:
```

```
POST /api/protocols/san/igroups

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/igroups?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name": "igroup2",
"os_type": "windows", "protocol": "mixed", "initiators": [ { "name":
"20:01:00:50:56:bb:70:72" }, { "name": "iqn.1991-05.com.ms:host1" } ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup2",
    "protocol": "mixed",
    "os_type": "windows",
    "initiators": [
      {
        "name": "20:01:00:50:56:bb:70:72",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/20:01:00:50:56:bb:70:72"
          }
        }
      },
      {
        "name": "iqn.1991-05.com.ms:host1",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/iqn.1991-05.com.ms:host1"
          }
        }
      }
```

```
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  }
]
}
```

Creating an initiator group with nested initiator groups

The example initiator group used here is for Windows. FC Protocol and iSCSI initiators are allowed. Note that the `return_records` query parameter is used to obtain the newly created initiator group in the response. The new initiator group is create so as to contain the initiator group created in the previous example. The initiators list reports all initiators nested below this initiator group, and note that the href link for the initiators refers to the initiator group that directly owns the initiator, not this initiator group.

```
# The API:
POST /api/protocols/san/igroups

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/igroups?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name": "igroup3",
"os_type": "windows", "protocol": "mixed", "igroups": [ { "name":
"igroup2" } ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7073",
    "name": "igroup3",
```

```
    "protocol": "mixed",
    "os_type": "windows",
    "igroups": [
      {
        "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
        "name": "igroup2",
        "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
      }
    ],
    "initiators": [
      {
        "name": "20:01:00:50:56:bb:70:72",
        "igroup": {
          "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
          "name": "igroup2",
          "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/20:01:00:50:56:bb:70:72"
          }
        }
      },
      {
        "name": "iqn.1991-05.com.ms:host1",
        "igroup": {
          "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
          "name": "igroup2",
          "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/iqn.1991-05.com.ms:host1"
          }
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7073"
```

```
      }
    }
  }
]
}
```

Retrieving all initiator groups

```
# The API:
GET /api/protocols/san/igroups

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/igroups' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup1",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  },
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
```

```
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup2",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  },
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7073",
    "name": "igroup3",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7073"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/protocols/san/igroups"
  }
}
}
```


Retrieving all properties of all initiator groups

The `fields` query parameter is used to request all initiator group properties. Note that the nested and parent initiator groups are considered expensive properties and will only be returned if explicitly requested.

```
# The API:
GET /api/protocols/san/igroups

# The call:
curl -X GET 'https://<mgmt-
ip>/api/protocols/san/igroups?fields=*,igroups,parent_igroups' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup1",
    "protocol": "iscsi",
    "os_type": "linux",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  },
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup2",
    "parent_igroups": [
```

```
      {
        "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7073",
        "name": "igroup3",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7073"
          }
        }
      }
    ],
    "protocol": "mixed",
    "os_type": "windows",
    "initiators": [
      {
        "name": "20:01:00:50:56:bb:70:72",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/20:01:00:50:56:bb:70:72"
          }
        }
      },
      {
        "name": "iqn.1991-05.com.ms:host1",
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/iqn.1991-05.com.ms:host1"
          }
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  },
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
```

```
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7073",
    "name": "igroup3",
    "protocol": "mixed",
    "os_type": "windows",
    "igroups": [
      {
        "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
        "name": "igroup2",
        "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
      }
    ],
    "initiators": [
      {
        "name": "20:01:00:50:56:bb:70:72",
        "igroup": {
          "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
          "name": "igroup2",
          "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/20:01:00:50:56:bb:70:72"
          }
        }
      },
      {
        "name": "iqn.1991-05.com.ms:host1",
        "igroup": {
          "uuid": "abf9c39d-ab9f-11e8-b8a3-005056bb7072",
          "name": "igroup2",
          "_links": { "self": { "href":
"/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-005056bb7072" } }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7072/initiators/iqn.1991-05.com.ms:host1"
          }
        }
```

```
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/abf9c39d-ab9f-11e8-b8a3-
005056bb7073"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/protocols/san/igroups?fields=*"
  }
}
}
```

Retrieving all initiator groups for Linux

The `os_type` query parameter is used to perform the query.

```
# The API:
GET /api/protocols/san/igroups

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/igroups?os_type=linux' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
        }
      }
    },
    "uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
    "name": "igroup1",
    "os_type": "linux",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/protocols/san/igroups?os_type=linux"
  }
}
}
```

Retrieving a specific initiator group

```
# The API:
GET /api/protocols/san/igroups/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
    }
  }
},
"uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
"name": "igroup1",
"protocol": "iscsi",
"os_type": "linux",
"_links": {
  "self": {
    "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
  }
}
}
```

Retrieving LUNs mapped to a specific initiator group

The `fields` parameter is used to specify the desired properties.

```
# The API:
GET /api/protocols/san/igroups

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072?fields=lun_maps' -H 'Accept: application/hal+json'

# The response:
{
```

```
"svm": {
  "uuid": "02b0dfff-aa28-11e8-a653-005056bb7072",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/02b0dfff-aa28-11e8-a653-005056bb7072"
    }
  }
},
"uuid": "8f249e7d-ab9f-11e8-b8a3-005056bb7072",
"name": "igroup1",
"lun_maps": [
  {
    "logical_unit_number": 0,
    "lun": {
      "name": "/vol/vol1/lun1",
      "uuid": "4b33ba57-c4e0-4dbb-bc47-214800d18a71",
      "node": {
        "name": "node1",
        "uuid": "f17182af-223f-4d51-8197-2cb2146d5c4c",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/f17182af-223f-4d51-8197-
2cb2146d5c4c"
          }
        }
      },
      "_links": {
        "self": {
          "href": "/api/storage/luns/4b33ba57-c4e0-4dbb-bc47-214800d18a71"
        }
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/protocols/san/igroups/8f249e7d-ab9f-11e8-b8a3-
005056bb7072"
  }
}
}
```

Renaming an initiator group

Note that renaming an initiator group must be done in a PATCH request separate from any other modifications.

```
# The API:
PATCH /api/protocols/san/igroups/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072' -H 'Accept: application/hal+json' -d '{ "name":
"igroup1_newName" }'
```

Changing the operating system type of an initiator group

```
# The API:
PATCH /api/protocols/san/igroups/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072' -H 'Accept: application/hal+json' -d '{ "os_type":
"aix" }'
```

Adding an initiator to an initiator group

```
# The API:
POST /api/protocols/san/igroups/{igroup.uuid}/initiators

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/initiators' -H 'Accept: application/hal+json' -d '{
"name": "iqn.1991-05.com.ms:host2" }'
```

Adding multiple initiators to an initiator group

Note the use of the `records` property to add multiple initiators to the initiator group in a single API call.

```
# The API:
POST /api/protocols/san/igroups/{igroup.uuid}/initiators

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/initiators' -H 'Accept: application/hal+json' -d '{
"records": [ { "name": "iqn.1991-05.com.ms:host3" }, { "name": "iqn.1991-
05.com.ms:host4" } ] }'
```

Removing an initiator from an initiator group

```
# The API:
DELETE /api/protocols/san/igroups/{igroup.uuid}/initiators/iqn.1991-
05.com.ms:host3

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/initiators/iqn.1991-05.com.ms:host3' -H 'Accept:
application/hal+json'
```

Removing an initiator from a mapped initiator group

Normally, removing an initiator from an initiator group that is mapped to a LUN is not allowed. The removal can be forced using the `allow_delete_while_mapped` query parameter.

```
# The API:
DELETE /api/protocols/san/igroups/{igroup.uuid}/initiators/iqn.1991-
05.com.ms:host4

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/initiators/iqn.1991-
05.com.ms:host4?allow_delete_while_mapped=true' -H 'Accept:
application/hal+json'
```

Adding a nested initiator group to an initiator group

```
# The API:
POST /api/protocols/san/igroups/{igroup.uuid}/igroups

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/igroups' -H 'Accept: application/hal+json' -d '{
"name": "host2_igroup" }'
```

Adding multiple nested initiator groups to an initiator group

Note the use of the `records` property to add multiple nested initiator groups to the initiator group in a single API call.

```
# The API:
POST /api/protocols/san/igroups/{igroup.uuid}/igroups

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/igroups' -H 'Accept: application/hal+json' -d '{
"records": [ { "name": "host3_igroup" }, { "uuid": "c439efc8-0a70-11eb-
adc1-0242ac120002" } ] }'
```

Removing a nested initiator group from an initiator group

```
# The API:
DELETE /api/protocols/san/igroups/{igroup.uuid}/igroups/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/igroups/c439efc8-0a70-11eb-adc1-0242ac120002' -H
'Accept: application/hal+json'
```

Removing a nested initiator group from a mapped initiator group

Normally, removing a nested initiator group from an initiator group that is mapped to a LUN is not allowed. The removal can be forced using the `allow_delete_while_mapped` query parameter.

```
# The API:
DELETE /api/protocols/san/igroups/{igroup.uuid}/igroups/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/8f249e7d-ab9f-
11e8-b8a3-005056bb7072/igroups/c439efc8-0a70-11eb-adc1-
0242ac120002?allow_delete_while_mapped=true' -H 'Accept:
application/hal+json'
```

Deleting an initiator group

```
# The API:
DELETE /api/protocols/san/igroups/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/abf9c39d-ab9f-
11e8-b8a3-005056bb7072' -H 'Accept: application/hal+json'
```

Deleting a mapped initiator group

Normally, deleting an initiator group that is mapped to a LUN is not allowed. The deletion can be forced using the `allow_delete_while_mapped` query parameter.

```
# The API:
DELETE /api/protocols/san/igroups/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/igroups/abf9c39d-ab9f-
11e8-b8a3-005056bb7072?allow_delete_while_mapped=true' -H 'Accept:
application/hal+json'
```

Retrieve initiator groups

GET `/protocols/san/igroups`

Introduced In: 9.6

Retrieves initiator groups.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connectivity_tracking.*`
- `igroups.*`
- `lun_maps.*`
- `parent_igroups.*`
- `target.*`

Related ONTAP commands

- `lun igroup show`
- `lun mapping show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
parent_igroups.comment	string	query	False	Filter by parent_igroups.comment • maxLength: 254 • minLength: 0 • Introduced in: 9.9
parent_igroups.uuid	string	query	False	Filter by parent_igroups.uuid • Introduced in: 9.9
parent_igroups.name	string	query	False	Filter by parent_igroups.name • maxLength: 96 • minLength: 1 • Introduced in: 9.9

Name	Type	In	Required	Description
replication.peer_svm.uuid	string	query	False	Filter by replication.peer_svm.uuid • Introduced in: 9.15
replication.peer_svm.name	string	query	False	Filter by replication.peer_svm.name • Introduced in: 9.15
replication.error.summary.code	string	query	False	Filter by replication.error.summary.code • Introduced in: 9.15
replication.error.summary.message	string	query	False	Filter by replication.error.summary.message • Introduced in: 9.15
replication.error.summary.arguments.code	string	query	False	Filter by replication.error.summary.arguments.code • Introduced in: 9.15
replication.error.summary.arguments.message	string	query	False	Filter by replication.error.summary.arguments.message • Introduced in: 9.15

Name	Type	In	Required	Description
replication.error.igroup.name	string	query	False	Filter by replication.error.igroup.name • maxLength: 96 • minLength: 1 • Introduced in: 9.15
replication.error.igroup.uuid	string	query	False	Filter by replication.error.igroup.uuid • Introduced in: 9.15
replication.error.igroup.local_svm	boolean	query	False	Filter by replication.error.igroup.local_svm • Introduced in: 9.15
replication.state	string	query	False	Filter by replication.state • Introduced in: 9.15
uuid	string	query	False	Filter by uuid
os_type	string	query	False	Filter by os_type
protocol	string	query	False	Filter by protocol
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
lun_maps.logical_unit_number	integer	query	False	Filter by lun_maps.logical_unit_number
lun_maps.lun.name	string	query	False	Filter by lun_maps.lun.name

Name	Type	In	Required	Description
lun_maps.lun.node.uuid	string	query	False	Filter by lun_maps.lun.node.uuid
lun_maps.lun.node.name	string	query	False	Filter by lun_maps.lun.node.name
lun_maps.lun.uuid	string	query	False	Filter by lun_maps.lun.uuid
name	string	query	False	Filter by name • maxLength: 96 • minLength: 1
portset.uuid	string	query	False	Filter by portset.uuid • Introduced in: 9.9
portset.name	string	query	False	Filter by portset.name • maxLength: 96 • minLength: 1 • Introduced in: 9.9
target.firmware_revision	string	query	False	Filter by target.firmware_revision • Introduced in: 9.11
target.product_id	string	query	False	Filter by target.product_id • Introduced in: 9.11
target.vendor_id	string	query	False	Filter by target.vendor_id • Introduced in: 9.11

Name	Type	In	Required	Description
supports_igroups	boolean	query	False	Filter by supports_igroups • Introduced in: 9.9
igroups.uuid	string	query	False	Filter by igroups.uuid • Introduced in: 9.9
igroups.comment	string	query	False	Filter by igroups.comment • maxLength: 254 • minLength: 0 • Introduced in: 9.9
igroups.name	string	query	False	Filter by igroups.name • maxLength: 96 • minLength: 1 • Introduced in: 9.9
delete_on_unmap	boolean	query	False	Filter by delete_on_unmap
comment	string	query	False	Filter by comment • maxLength: 254 • minLength: 0 • Introduced in: 9.9
connectivity_tracking.alerts.summary.code	string	query	False	Filter by connectivity_tracking.alerts.summary.code • Introduced in: 9.11

Name	Type	In	Required	Description
connectivity_tracking.alerts.summary.message	string	query	False	Filter by connectivity_tracking.alerts.summary.message • Introduced in: 9.11
connectivity_tracking.alerts.summary.arguments.code	string	query	False	Filter by connectivity_tracking.alerts.summary.arguments.code • Introduced in: 9.11
connectivity_tracking.alerts.summary.arguments.message	string	query	False	Filter by connectivity_tracking.alerts.summary.arguments.message • Introduced in: 9.11
connectivity_tracking.required_nodes.uuid	string	query	False	Filter by connectivity_tracking.required_nodes.uuid • Introduced in: 9.11
connectivity_tracking.required_nodes.name	string	query	False	Filter by connectivity_tracking.required_nodes.name • Introduced in: 9.11
connectivity_tracking.connection_state	string	query	False	Filter by connectivity_tracking.connection_state • Introduced in: 9.11

Name	Type	In	Required	Description
initiators.comment	string	query	False	Filter by initiators.comment • maxLength: 254 • minLength: 0 • Introduced in: 9.9
initiators.igroup.uuid	string	query	False	Filter by initiators.igroup.uuid
initiators.igroup.name	string	query	False	Filter by initiators.igroup.name • maxLength: 96 • minLength: 1 • Introduced in: 9.9
initiators.connectivity_tracking.connection_state	string	query	False	Filter by initiators.connectivity_tracking.connection_state • Introduced in: 9.11
initiators.proximity.local_svm	boolean	query	False	Filter by initiators.proximity.local_svm • Introduced in: 9.15
initiators.proximity.peer_svms.uuid	string	query	False	Filter by initiators.proximity.peer_svms.uuid • Introduced in: 9.15
initiators.proximity.peer_svms.name	string	query	False	Filter by initiators.proximity.peer_svms.name • Introduced in: 9.15

Name	Type	In	Required	Description
initiators.name	string	query	False	Filter by initiators.name • maxLength: 96 • minLength: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[igroup]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "connectivity_tracking": {
        "alerts": [
          {
            "summary": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
              ],
              "code": "4",
              "message": "entry doesn't exist"
            }
          }
        ],
        "connection_state": "string",
        "required_nodes": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
```

```
        ]
      },
      "igroups": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "comment": "string",
          "igroups": [
            null
          ],
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "initiators": [
        {
          "_links": {
            "connectivity_tracking": {
              "href": "/api/resourcelink"
            },
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "comment": "string",
          "connectivity_tracking": {
            "connection_state": "string"
          },
          "igroup": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          },
          "name": "iqn.1998-01.com.corp.iscsi:name1",
          "proximity": {
            "peer_svms": [
              {
                "_links": {
                  "self": {
```

```
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
  ],
  "lun_maps": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "logical_unit_number": 0,
      "lun": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "lun1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "name": "igroup1",
  "os_type": "string",
  "parent_igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
```

```
          },
          "comment": "string",
          "name": "igroup1",
          "parent_igroups": [
            null
          ],
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "portset": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "portset1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "protocol": "string",
      "replication": {
        "error": {
          "igroup": {
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          },
          "summary": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          }
        },
        "peer_svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "state": "string"
```

```
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "firmware_revision": "9111",
        "product_id": "LUN C-Mode",
        "vendor_id": "NETAPP"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state of the initiator group.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

Name	Type	Description
summary	summary	A user friendly message describing the connection state of the initiator group.

required_nodes

Name	Type	Description
_links	_links	
name	string	
uuid	string	

connectivity_tracking

An overview of the connections to ONTAP by the initiators in this group.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
required_nodes	array[required_nodes]	Nodes to which the initiators in this group should be connected to ensure reliable service. This is the collection of any node hosting a LUN mapped to this igroup as well as the HA partners of those nodes.

igroup_child

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator.
igroups	array[igroup_child]	Further nested initiator groups.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

connectivity_tracking

A link to the initiator with connectivity information relevant to its membership of this initiator group.

Name	Type	Description
href	string	

self

A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group,

the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

Name	Type	Description
href	string	

_links

Name	Type	Description
connectivity_tracking	connectivity_tracking	A link to the initiator with connectivity information relevant to its membership of this initiator group.
self	self	A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group, the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
connection_state	string	Connection state.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

initiators

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

lun

The LUN to which the initiator group is mapped.

Name	Type	Description
_links	_links	
name	string	The name of the LUN.
node	node	
uuid	string	The unique identifier of the LUN.

lun_maps

A LUN map with which the initiator group is associated.

Name	Type	Description
_links	_links	
logical_unit_number	integer	The logical unit number assigned to the LUN for initiators in the initiator group.
lun	lun	The LUN to which the initiator group is mapped.

igroup_parent

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator.
name	string	The name of the initiator group.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
uuid	string	The unique identifier of the initiator group.

portset

The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset.

In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored.

Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").

Name	Type	Description
_links	_links	
name	string	The name of the portset.
uuid	string	The unique identifier of the portset.

igroup

Name	Type	Description
local_svm	boolean	Indicates whether the reported igroup is on the local SVM or the peer SVM. When deleting a replicated igroup, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer igroup remains, the peer igroup is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
igroup	igroup	
summary	summary	A user friendly message describing the error.

peer_svm

The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to initiator group replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
peer_svm	peer_svm	The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.
state	string	The state of the replication queue associated with this igroup. If this igroup is not in the replication queue, the state is reported as *ok*. If this igroup is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this igroup is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Properties of the SCSI target to which the initiator group provides access.

Name	Type	Description
firmware_revision	string	The firmware revision of the SCSI target specific to the OS type of the initiator group.

Name	Type	Description
product_id	string	The product ID of the SCSI target.
vendor_id	string	The vendor ID of the SCSI target.

igroup

An initiator group (igroup) is a collection of Fibre Channel (FC) world wide port names (WWPNs), and/or iSCSI Qualified Names (IQNs), and/or iSCSI EUIs (Extended Unique Identifiers) that identify host endpoints.

Initiator groups are used to control which hosts can access specific LUNs. To grant access to a LUN from one or more hosts, create an initiator group containing the host initiator names, then create a LUN map that associates the initiator group with the LUN.

An initiator group may contain either initiators or other initiator groups, but not both simultaneously. When a parent initiator group is mapped, it inherits all of the initiators of any initiator groups nested below it. If any nested initiator group is modified to contain different initiators, the parent initiator groups inherit the change. A parent can have many nested initiator groups and an initiator group can be nested under multiple parents. Initiators can only be added or removed from the initiator group that directly contains them. The maximum supported depth of nesting is three layers.

Best practice when using nested initiator groups is to match host hierarchies. A single initiator group should correspond to a single host. If a LUN needs to be mapped to multiple hosts, the initiator groups representing those hosts should be aggregated into a parent initiator group and the LUN should be mapped to that initiator group. For multi-ported hosts, initiators have a comment property where the port corresponding to the initiator can be documented.

An initiator can appear in multiple initiator groups. An initiator group can be mapped to multiple LUNs. A specific initiator can be mapped to a specific LUN only once. With the introduction of nestable initiator groups, best practice is to use the hierarchy such that an initiator is only a direct member of a single initiator group, and that initiator group can then be referenced by other initiator groups.

All initiators or nested initiator groups in an initiator group must be from the same operating system. The initiator group's operating system is specified when the initiator group is created.

When an initiator group is created, the `protocol` property is used to restrict member initiators to Fibre Channel (*fcp*), iSCSI (*iscsi*), or both (*mixed*). Initiator groups within a nested hierarchy may not have conflicting protocols.

Zero or more initiators or nested initiator groups can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. Initiator groups containing other initiator groups report the aggregated list of initiators from all nested initiator groups, but modifications of the initiator list must be performed on the initiator group that directly contains the initiators. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.

Name	Type	Description
_links	_links	

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.

Name	Type	Description
igroups	array[igroup_child]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.

Name	Type	Description
initiators	array[initiators]	The initiators that are members of the group or any group nested below this group. Optional in POST. This property is mutually exclusive with the *igroups* property during POST. During GET, this array contains initiators that are members of this group or any nested initiator groups below this group. When initiators of nested groups are returned, they include links to the initiator group that directly contains the initiator. Zero or more initiators can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.

Name	Type	Description
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
replication	replication	Properties related to initiator group replication.

Name	Type	Description
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an initiator group

POST `/protocols/san/igroups`

Introduced In: 9.6

Creates an initiator group.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the initiator group.

- `name` - Name of the initiator group.
- `os_type` - Operating system of the initiator group's initiators.

Recommended optional properties

- `initiators.name` - Name(s) of initiator group's initiators. This property can be used to create the initiator group and populate it with initiators in a single request.

Default property values

If not specified in POST, the following default property values are assigned.

- `protocol` - *mixed* - Data protocol of the initiator group's initiators.

Related ONTAP commands

- `lun igroup create`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11

Name	Type	Description
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.
igroups	array[igroup_child]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.

Name	Type	Description
initiators	array[initiators]	The initiators that are members of the group or any group nested below this group. Optional in POST. This property is mutually exclusive with the *igroups* property during POST. During GET, this array contains initiators that are members of this group or any nested initiator groups below this group. When initiators of nested groups are returned, they include links to the initiator group that directly contains the initiator. Zero or more initiators can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.

Name	Type	Description
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
replication	replication	Properties related to initiator group replication.

Name	Type	Description
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

Example request


```
{
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {}
    ],
    "connection_state": "string",
    "required_nodes": [
      {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  },
  "igroups": [
    {
      "comment": "string",
      "igroups": [
        null
      ],
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "initiators": [
    {
      "comment": "string",
      "connectivity_tracking": {
        "connection_state": "string"
      },
      "igroup": {
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "iqn.1998-01.com.corp.iscsi:name1",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
```

```
  ],
  "lun_maps": [
    {
      "logical_unit_number": 0,
      "lun": {
        "name": "lun1",
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "name": "igroup1",
  "os_type": "string",
  "parent_igroups": [
    {
      "comment": "string",
      "name": "igroup1",
      "parent_igroups": [
        null
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "portset": {
    "name": "portset1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "protocol": "string",
  "replication": {
    "error": {
      "igroup": {
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "peer_svm": {
      "name": "peer1",
      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
    },
    "state": "string"
  },
  "svm": {
    "name": "svm1",
```

```
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "firmware_revision": "9111",
    "product_id": "LUN C-Mode",
    "vendor_id": "NETAPP"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[igroup]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "comment": "string",
      "connectivity_tracking": {
        "alerts": [
          {}
        ],
        "connection_state": "string",
        "required_nodes": [
          {
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ]
      },
      "igroups": [
        {
          "comment": "string",
          "igroups": [
            null
          ],
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "initiators": [
        {
          "comment": "string",
          "connectivity_tracking": {
            "connection_state": "string"
          },
          "igroup": {
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          },
          "name": "iqn.1998-01.com.corp.iscsi:name1",
          "proximity": {
            "peer_svms": [
              {
                "name": "peer1",
                "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
              }
```

```
            ]
          }
        }
      ],
      "lun_maps": [
        {
          "logical_unit_number": 0,
          "lun": {
            "name": "lun1",
            "node": {
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "name": "igroup1",
      "os_type": "string",
      "parent_igroups": [
        {
          "comment": "string",
          "name": "igroup1",
          "parent_igroups": [
            null
          ],
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "portset": {
        "name": "portset1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "protocol": "string",
      "replication": {
        "error": {
          "igroup": {
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        },
        "peer_svm": {
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "state": "string"
```

```
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "firmware_revision": "9111",
        "product_id": "LUN C-Mode",
        "vendor_id": "NETAPP"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The supplied SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373958	An invalid initiator group name was supplied.
5373966	An initiator group cannot be created in an SVM that is configured for NVMe.
5373969	A supplied initiator name looks like an iSCSI IQN initiator, but the portions after the prefix are missing.
5373971	A supplied initiator name looks like an iSCSI IQN initiator, but the date portion is invalid.
5373972	A supplied initiator name looks like an iSCSI IQN initiator, but the naming authority portion is invalid.

Error Code	Description
5373977	A supplied initiator name looks like an iSCSI EUI initiator, but the length is invalid.
5373978	A supplied initiator name looks like an iSCSI EUI initiator, but the format is invalid.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5373992	A supplied initiator name was too long to be valid.
5373993	A supplied initiator name did not match any valid format.
5374023	An initiator group with the same name already exists.
5374027	An attempt was made to bind a portset with no member network interfaces to the initiator group.
5374028	An attempt was made to bind a portset with an incompatible protocol to the initiator group.
5374038	An invalid Fibre Channel WWPN was supplied.
5374039	An invalid iSCSI initiator name was supplied.
5374040	Initiators and child initiator groups were both supplied, but only one option is allowed.
5374732	An initiator is already in another initiator group with a conflicting operating system type.
5374735	An attempt was made to add a child igroup that would exceed the maximum allowable depth.
5374737	A supplied child initiator group already exists in another initiator group's hierarchy.
5374739	A supplied child initiator group has an operating system type that differs from the parent initiator group.
5374740	A supplied child initiator group has an protocol that differs from the parent initiator group.
5374741	A supplied child initiator group is already owned by a different child in the initiator group's hierarchy.
5374742	A supplied child initiator group contains an initiator that is already owned by another initiator group in the hierarchy.
5374745	Initiator group cannot be added as a child to itself.
5374746	The cluster is currently running in a mixed version and nested initiator groups cannot be created until the effective cluster version reaches 9.9.1.

Error Code	Description
5374747	The cluster is currently running in a mixed version and initiator group comments cannot be created until the effective cluster version reaches 9.9.1.
5374758	An error was reported by the peer cluster while creating a replicated initiator group. The specific error will be included as a nested error.
5374878	The supplied child initiator group does not exist.
5374911	The supplied portset does not exist.
5374917	Duplicated initiators have conflicting property values.
5375055	The `local_svm` property of an initiator proximity was not specified.
5375056	An SVM peering relationship that does not have the initiator group's SVM as the local SVM was specified.
5375258	The igroup is already replicated to a different peer SVM.
5375261	Setting initiator proximity is not supported for the SVM type.
5376057	Setting initiator proximity is not supported for the ONTAP version.
5376059	Setting initiator proximity to a peer that is either the destination of an SVM DR relationship or in a Metrocluster configuration is not supported.
5376253	Initiator group replication requires an effective cluster version of 9.15.1.
5376255	Initiator group replication requires the peer cluster to have an effective cluster version of 9.15.1.
5376488	An NVMe over Fabrics subsystem already exists with the requested name.
6620376	SVM peering information is unavailable.
6620384	The supplied SVMs are not peered.
26345672	The specified SVM peering relationship was not found.
26345673	An SVM peering relationship between the initiator group's SVM and specified peer SVM was not found.
26345675	An SVM peering relationship UUID and name were specified and they do not refer to the same SVM peering relationship.
26345680	Supplied SVM peer is on the local cluster. The operation requires a peer on a remote cluster.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state of the initiator group.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

required_nodes

Name	Type	Description
name	string	
uuid	string	

connectivity_tracking

An overview of the connections to ONTAP by the initiators in this group.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.

Name	Type	Description
required_nodes	array[required_nodes]	Nodes to which the initiators in this group should be connected to ensure reliable service. This is the collection of any node hosting a LUN mapped to this igroup as well as the HA partners of those nodes.

igroup_child

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroup_child]	Further nested initiator groups.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

connectivity_tracking

A link to the initiator with connectivity information relevant to its membership of this initiator group.

Name	Type	Description
href	string	

self

A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group, the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

Name	Type	Description
href	string	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
connection_state	string	Connection state.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

initiators

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

node

Name	Type	Description
name	string	
uuid	string	

lun

The LUN to which the initiator group is mapped.

Name	Type	Description
name	string	The name of the LUN.
node	node	
uuid	string	The unique identifier of the LUN.

lun_maps

A LUN map with which the initiator group is associated.

Name	Type	Description
logical_unit_number	integer	The logical unit number assigned to the LUN for initiators in the initiator group.
lun	lun	The LUN to which the initiator group is mapped.

igroup_parent

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	The name of the initiator group.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
uuid	string	The unique identifier of the initiator group.

portset

The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset.

In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored.

Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").

Name	Type	Description
name	string	The name of the portset.
uuid	string	The unique identifier of the portset.

igroup

Name	Type	Description
local_svm	boolean	Indicates whether the reported igroup is on the local SVM or the peer SVM. When deleting a replicated igroup, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer igroup remains, the peer igroup is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
igroup	igroup	

peer_svm

The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to initiator group replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_svm	peer_svm	The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.

Name	Type	Description
state	string	The state of the replication queue associated with this igroup. If this igroup is not in the replication queue, the state is reported as *ok*. If this igroup is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this igroup is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Properties of the SCSI target to which the initiator group provides access.

Name	Type	Description
firmware_revision	string	The firmware revision of the SCSI target specific to the OS type of the initiator group.
product_id	string	The product ID of the SCSI target.
vendor_id	string	The vendor ID of the SCSI target.

igroup

An initiator group (igroup) is a collection of Fibre Channel (FC) world wide port names (WWPNs), and/or iSCSI Qualified Names (IQNs), and/or iSCSI EUIs (Extended Unique Identifiers) that identify host

endpoints.

Initiator groups are used to control which hosts can access specific LUNs. To grant access to a LUN from one or more hosts, create an initiator group containing the host initiator names, then create a LUN map that associates the initiator group with the LUN.

An initiator group may contain either initiators or other initiator groups, but not both simultaneously. When a parent initiator group is mapped, it inherits all of the initiators of any initiator groups nested below it. If any nested initiator group is modified to contain different initiators, the parent initiator groups inherit the change. A parent can have many nested initiator groups and an initiator group can be nested under multiple parents. Initiators can only be added or removed from the initiator group that directly contains them. The maximum supported depth of nesting is three layers.

Best practice when using nested initiator groups is to match host hierarchies. A single initiator group should correspond to a single host. If a LUN needs to be mapped to multiple hosts, the initiator groups representing those hosts should be aggregated into a parent initiator group and the LUN should be mapped to that initiator group. For multi-ported hosts, initiators have a comment property where the port corresponding to the initiator can be documented.

An initiator can appear in multiple initiator groups. An initiator group can be mapped to multiple LUNs. A specific initiator can be mapped to a specific LUN only once. With the introduction of nestable initiator groups, best practice is to use the hierarchy such that an initiator is only a direct member of a single initiator group, and that initiator group can then be referenced by other initiator groups.

All initiators or nested initiator groups in an initiator group must be from the same operating system. The initiator group's operating system is specified when the initiator group is created.

When an initiator group is created, the `protocol` property is used to restrict member initiators to Fibre Channel (*fcp*), iSCSI (*iscsi*), or both (*mixed*). Initiator groups within a nested hierarchy may not have conflicting protocols.

Zero or more initiators or nested initiator groups can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. Initiator groups containing other initiator groups report the aggregated list of initiators from all nested initiator groups, but modifications of the initiator list must be performed on the initiator group that directly contains the initiators. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11

Name	Type	Description
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.
igroups	array[igroup_child]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.

Name	Type	Description
initiators	array[initiators]	The initiators that are members of the group or any group nested below this group. Optional in POST. This property is mutually exclusive with the *igroups* property during POST. During GET, this array contains initiators that are members of this group or any nested initiator groups below this group. When initiators of nested groups are returned, they include links to the initiator group that directly contains the initiator. Zero or more initiators can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.

Name	Type	Description
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
replication	replication	Properties related to initiator group replication.

Name	Type	Description
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve nested initiator groups of an initiator group

GET `/protocols/san/igroups/{igroup.uuid}/igroups`

Introduced In: 9.9

Retrieves nested initiator groups of an initiator group.

This API only reports the nested initiator groups that are direct children of the initiator group. Further nested initiator groups are reported by their direct parent initiator group.

Related ONTAP commands

- `lun igroup show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the parent initiator group.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[igroup_nested]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374852	The initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

igroup

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the parent initiator group.

records

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

igroup_nested

Name	Type	Description
_links	_links	
igroup	igroup	
name	string	The name of the initiator group.

Name	Type	Description
uuid	string	The unique identifier of the initiator group.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add nested initiator groups to an initiator group

POST `/protocols/san/igroups/{igroup.uuid}/igroups`

Introduced In: 9.9

Adds one or more nested initiator groups to an initiator group. A single nested initiator group can be added by directly specifying the name or UUID. Multiple nested initiator groups can be added by specifying the names or UUIDs in the records array. Nested initiator groups cannot be added to an initiator group that already directly contains initiators.

Required properties

- `name` and/or `uuid` or `records` - Nested initiator groups to add to the initiator group.

Related ONTAP commands

- `lun igroup add`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the parent initiator group.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
igroup	igroup	
name	string	The name of the initiator group.
records	array[records]	An array of initiator groups specified to add multiple nested initiator groups to an initiator group in a single API call. Not allowed when the `name` property is used.
uuid	string	The unique identifier of the initiator group.

Example request

```
{
  "igroup": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "igroup1",
  "records": [
    {
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[igroup_nested]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "igroup": {
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "igroup1",
      "records": [
        {
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374735	An attempt was made to add a child igroup that would exceed the maximum allowable depth.
5374736	A supplied child initiator group already exists in the parent initiator group's hierarchy.
5374737	A supplied child initiator group already exists in another initiator group's hierarchy.
5374739	A supplied child initiator group has an operating system type that differs from the parent initiator group.
5374740	A supplied child initiator group has an protocol that differs from the parent initiator group.
5374741	A supplied child initiator group is already owned by a different child in the initiator group's hierarchy.
5374742	A supplied child initiator group contains an initiator that is already owned by another initiator group in the hierarchy.
5374764	An unreplicated initiator group cannot be added as a child of a replicated initiator group.
5374852	The initiator group specified in the URI does not exist.
5374878	The supplied child initiator group does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

igroup

Name	Type	Description
uuid	string	The unique identifier of the parent initiator group.

records

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

igroup_nested

Name	Type	Description
igroup	igroup	
name	string	The name of the initiator group.
records	array[records]	An array of initiator groups specified to add multiple nested initiator groups to an initiator group in a single API call. Not allowed when the `name` property is used.
uuid	string	The unique identifier of the initiator group.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Remove a nested initiator group from an initiator group

DELETE `/protocols/san/igroups/{igroup.uuid}/igroups/{uuid}`

Introduced In: 9.9

Removes a nested initiator group from an initiator group. This API does not delete the nested initiator group itself. It removes the relationship between a parent and child initiator group.

This API only supports removal of initiator groups owned directly by the initiator group. Further nested initiator groups must be removed from the direct parent initiator group.

Related ONTAP commands

- `lun igroup remove`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the parent initiator group.
uuid	string	path	True	The unique identifier of the nested initiator group.

Name	Type	In	Required	Description
allow_delete_while_mapped	boolean	query	False	Allows the deletion of a nested initiator group from of a mapped initiator group. Deleting a nested initiator group from a mapped initiator group means that the LUNs, to which the initiator group is mapped, are no longer available to the initiators nested below the initiator group being removed. This might cause a disruption in the availability of data. **This parameter should be used with caution.** • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254213	The initiator group is mapped to one or more LUNs and `allow_delete_while_mapped` has not been specified.
5374738	The child initiator group is not owned by the parent initiator group.
5374743	LUN maps exist for a parent initiator group.

Error Code	Description
5374852	The initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a nested initiator group of an initiator group

GET `/protocols/san/igroups/{igroup.uuid}/igroups/{uuid}`

Introduced In: 9.9

Retrieves a nested initiator group of an initiator group.

This API only reports the nested initiator groups that are direct children of the initiator group. Further nested initiator groups are reported by their direct parent initiator group.

Related ONTAP commands

- `lun igroup show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the parent initiator group.

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the nested initiator group.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
igroup	igroup	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "igroup": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "igroup1",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The nested initiator group is not a member of the initiator group.
5374852	The parent initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

igroup

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the parent initiator group.

records

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve initiators of an initiator group

GET `/protocols/san/igroups/{igroup.uuid}/initiators`

Introduced In: 9.6

Retrieves initiators of an initiator group.

This API only reports initiators owned directly by the initiator group. Initiators of nested initiator groups are not included in this collection.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connectivity_tracking.*`

Related ONTAP commands

- `lun igroup show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the initiator group.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[igroup_initiator]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "connectivity_tracking": {
        "alerts": [
          {
            "summary": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
              ],
              "code": "4",
              "message": "entry doesn't exist"
            }
          }
        ],
        "connection_state": "string",
        "connections": [
          {
            "logins": [
              {
                "interface": {
                  "fc": {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
```

```
                    },
                    "name": "fc_lif1",
                    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                    "wwpn": "20:00:00:50:56:b4:13:a8"
                  },
                  "ip": {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "ip": {
                      "address": "10.10.10.7"
                    },
                    "name": "lif1",
                    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                  }
                },
                "last_seen_time": "2021-03-14 00:19:00 -0500"
              }
            ],
            "node": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ]
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "iqn.1998-01.com.corp.iscsi:name1",
      "proximity": {
        "peer_svms": [
          {
```

```
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374852	The initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

Name	Type	Description
summary	summary	A user friendly message describing the connection state.

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interface

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.

logins

Name	Type	Description
connected	boolean	True if the initiator is currently logged in to this connection's interface.
interface	interface	
last_seen_time	string	The last time this initiator logged in. Logins not seen for 48 hours are cleared and not reported.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

connections

Name	Type	Description
logins	array[logins]	
node	node	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
connections	array[connections]	

igroup

The initiator group in which the initiator is found.

Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.

Name	Type	Description
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

records

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

igroup_initiator

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add initiators to an initiator group

POST `/protocols/san/igroups/{igroup.uuid}/initiators`

Introduced In: 9.6

Adds one or more initiators to an initiator group.

This API does not support adding initiators to an initiator group that already contains nested initiator groups.

Required properties

- `name` or `records.name` - Initiator name(s) to add to the initiator group.

Related ONTAP commands

- `lun igroup add`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the initiator group.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.
records	array[records]	An array of initiators specified to add multiple initiators to an initiator group in a single API call. Not allowed when the `name` property is used.

Example request


```
{
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {}
    ],
    "connection_state": "string",
    "connections": [
      {
        "logins": [
          {
            "interface": {
              "fc": {
                "name": "fc_lif1",
                "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                "wwpn": "20:00:00:50:56:b4:13:a8"
              },
              "ip": {
                "name": "lif1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            },
            "last_seen_time": "2021-03-14 00:19:00 -0500"
          }
        ],
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  },
  "igroup": {
    "name": "igroup1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "iqn.1998-01.com.corp.iscsi:name1",
  "proximity": {
    "peer_svms": [
      {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
```

```
  },
  "records": [
    {
      "comment": "string",
      "name": "iqn.1998-01.com.corp.iscsi:name1",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
  ]
}
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[igroup_initiator]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "comment": "string",
      "connectivity_tracking": {
        "alerts": [
          {}
        ],
        "connection_state": "string",
        "connections": [
          {
            "logins": [
              {
                "interface": {
                  "fc": {
                    "name": "fc_lif1",
                    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                    "wwpn": "20:00:00:50:56:b4:13:a8"
                  },
                  "ip": {
                    "name": "lif1",
                    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                  }
                },
                "last_seen_time": "2021-03-14 00:19:00 -0500"
              }
            ],
            "node": {
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ]
      },
      "igroup": {
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "iqn.1998-01.com.corp.iscsi:name1",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
```

```
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      },
      "records": [
        {
          "comment": "string",
          "name": "iqn.1998-01.com.corp.iscsi:name1",
          "proximity": {
            "peer_svms": [
              {
                "name": "peer1",
                "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
              }
            ]
          }
        }
      ]
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254193	Adding an initiator would cause the initiator to be mapped to the same LUN more than once.
1254324	Adding an initiator would cause the initiator to have the same logical unit identifier for multiple LUN maps.
5373969	A supplied initiator name looks like an iSCSI IQN initiator, but the portions after the prefix are missing.
5373971	A supplied initiator name looks like an iSCSI IQN initiator, but the date portion is invalid.

Error Code	Description
5373972	A supplied initiator name looks like an iSCSI IQN initiator, but the naming authority portion is invalid.
5373977	A supplied initiator name looks like an iSCSI EUI initiator, but the length is invalid.
5373978	A supplied initiator name looks like an iSCSI EUI initiator, but the format is invalid.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5373992	A supplied initiator name was too long to be valid.
5373993	A supplied initiator name did not match any valid format.
5374033	Initiators must be supplied.
5374035	A supplied initiator is already in the initiator group.
5374038	An invalid Fibre Channel WWPN was supplied.
5374039	An invalid iSCSI initiator name was supplied.
5374734	An initiator is already in another initiator group with a conflicting operating system type.
5374761	An error was reported by the peer cluster while adding an initiator to a replicated initiator group. The specific error will be included as a nested error.
5374852	The initiator group specified in the URI does not exist.
5374917	Duplicated initiators have conflicting property values.
5375055	The `local_svm` property of an initiator proximity was not specified.
5375056	An SVM peering relationship that does not have the initiator group's SVM as the local SVM was specified.
5375261	Setting initiator proximity is not supported for the SVM type.
5376057	Setting initiator proximity is not supported for the ONTAP version.
5376059	Setting initiator proximity to a peer that is either the destination of an SVM DR relationship or in a Metrocluster configuration is not supported.
26345672	The specified SVM peering relationship was not found.
26345673	An SVM peering relationship between the initiator group's SVM and specified peer SVM was not found.

Error Code	Description
26345675	An SVM peering relationship UUID and name were specified and they do not refer to the same SVM peering relationship.
26345680	Supplied SVM peer is on the local cluster. The operation requires a peer on a remote cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

fc

An FC interface.

Name	Type	Description
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interface

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.

logins

Name	Type	Description
connected	boolean	True if the initiator is currently logged in to this connection's interface.
interface	interface	
last_seen_time	string	The last time this initiator logged in. Logins not seen for 48 hours are cleared and not reported.

node

Name	Type	Description
name	string	
uuid	string	

connections

Name	Type	Description
logins	array[logins]	
node	node	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
connections	array[connections]	

igroup

The initiator group in which the initiator is found.

Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator

in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

records

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

igroup_initiator

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.
records	array[records]	An array of initiators specified to add multiple initiators to an initiator group in a single API call. Not allowed when the `name` property is used.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an initiator from an initiator group

DELETE `/protocols/san/igroups/{igroup.uuid}/initiators/{name}`

Introduced In: 9.6

Deletes an initiator from an initiator group.

This API only supports removal of initiators owned directly by the initiator group. Initiators of nested initiator groups must be removed on the initiator group that directly owns the initiator.

Related ONTAP commands

- `lun igroup remove`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the initiator group.
name	string	path	True	The initiator name.

Name	Type	In	Required	Description
allow_delete_while_mapped	boolean	query	False	Allows the deletion of an initiator from of a mapped initiator group. Deleting an initiator from a mapped initiator group makes the LUNs to which the initiator group is mapped no longer available to the initiator. This might cause a disruption in the availability of data. **This parameter should be used with caution.** • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254213	The initiator group is mapped to one or more LUNs and `allow_delete_while_mapped` has not been specified.
5374034	An initiator is not a member of the initiator group.
5374041	The initiator is not owned by the supplied initiator group.
5374762	An error was reported by the peer cluster while removing an initiator from a replicated initiator group. The specific error will be included as a nested error.
5374852	The initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an initiator

GET `/protocols/san/igroups/{igroup.uuid}/initiators/{name}`

Introduced In: 9.6

Retrieves an initiator of an initiator group.

This API only reports initiators owned directly by the initiator group. Initiators of nested initiator groups are not part of this collection.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connectivity_tracking.*`

Related ONTAP commands

- `lun igroup show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the initiator group.
name	string	path	True	The initiator name.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {
        "summary": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        }
      }
    ],
    "connection_state": "string",
    "connections": [
      {
        "logins": [
          {
            "interface": {
              "fc": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "fc_lif1",
                "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                "wwpn": "20:00:00:50:56:b4:13:a8"
              },
              "ip": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
```

```
                "ip": {
                  "address": "10.10.10.7"
                },
                "name": "lif1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            },
            "last_seen_time": "2021-03-14 00:19:00 -0500"
          }
        ],
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  },
  "igroup": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "igroup1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "iqn.1998-01.com.corp.iscsi:name1",
  "proximity": {
    "peer_svms": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The initiator is not a member of the initiator group.
5374852	The initiator group specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

Name	Type	Description
summary	summary	A user friendly message describing the connection state.

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.

Name	Type	Description
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interface

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.

logins

Name	Type	Description
connected	boolean	True if the initiator is currently logged in to this connection's interface.
interface	interface	
last_seen_time	string	The last time this initiator logged in. Logins not seen for 48 hours are cleared and not reported.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

connections

Name	Type	Description
logins	array[logins]	
node	node	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
connections	array[connections]	

igroup

The initiator group in which the initiator is found.

Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.

Name	Type	Description
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

records

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an initiator

PATCH `/protocols/san/igroups/{igroup.uuid}/initiators/{name}`

Introduced In: 9.9

Updates an initiator of an initiator group.

This API only supports modification of initiators owned directly by the initiator group. Initiators of nested initiator groups must be modified on the initiator group that directly owns the initiator.

Related ONTAP commands

- `lun igroup initiator modify`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the initiator group.
name	string	path	True	The initiator name.

Request Body

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.
records	array[records]	An array of initiators specified to add multiple initiators to an initiator group in a single API call. Not allowed when the `name` property is used.

Example request


```
{
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {}
    ],
    "connection_state": "string",
    "connections": [
      {
        "logins": [
          {
            "interface": {
              "fc": {
                "name": "fc_lif1",
                "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
                "wwpn": "20:00:00:50:56:b4:13:a8"
              },
              "ip": {
                "name": "lif1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            },
            "last_seen_time": "2021-03-14 00:19:00 -0500"
          }
        ],
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  },
  "igroup": {
    "name": "igroup1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "proximity": {
    "peer_svms": [
      {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      }
    ]
  },
```

```
  "records": [
    {
      "comment": "string",
      "proximity": {
        "peer_svms": [
          {
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
  ]
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374034	An initiator is not a member of the initiator group.
5374744	The cluster is currently running in a mixed version and the initiators cannot be modified until the effective cluster version reaches 9.9.1.
5374852	The initiator group does not exist.
5374918	A subset of the provided list of initiators were modified before a failure occurred.
5375055	The `local_svm` property of an initiator proximity was not specified.
5375056	An SVM peering relationship that does not have the initiator group's SVM as the local SVM was specified.
5375261	Setting initiator proximity is not supported for the SVM type.
5376057	Setting initiator proximity is not supported for the ONTAP version.

Error Code	Description
5376059	Setting initiator proximity to a peer that is either the destination of an SVM DR relationship or in a Metrocluster configuration is not supported.
26345672	The specified SVM peering relationship was not found.
26345673	An SVM peering relationship between the initiator group's SVM and specified peer SVM was not found.
26345675	An SVM peering relationship UUID and name were specified and they do not refer to the same SVM peering relationship.
26345680	Supplied SVM peer is on the local cluster. The operation requires a peer on a remote cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

fc

An FC interface.

Name	Type	Description
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interface

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.

logins

Name	Type	Description
connected	boolean	True if the initiator is currently logged in to this connection's interface.
interface	interface	
last_seen_time	string	The last time this initiator logged in. Logins not seen for 48 hours are cleared and not reported.

node

Name	Type	Description
name	string	
uuid	string	

connections

Name	Type	Description
logins	array[logins]	
node	node	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
connections	array[connections]	

igroup

The initiator group in which the initiator is found.

Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator

in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

records

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

igroup_initiator

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group in which the initiator is found. Note that this does not mean that the initiator cannot also be found in other initiator groups.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.
records	array[records]	An array of initiators specified to add multiple initiators to an initiator group in a single API call. Not allowed when the `name` property is used.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an initiator group

DELETE `/protocols/san/igroups/{uuid}`

Introduced In: 9.6

Deletes an initiator group.

Related ONTAP commands

- `lun igroup delete`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the initiator group.
allow_delete_while_mapped	boolean	query	False	Allows the deletion of a mapped initiator group. Deleting a mapped initiator group means that the LUNs, to which the initiator group is mapped, are no longer available to the initiators. This might cause a disruption in the availability of data. **This parameter should be used with caution.** • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254213	The initiator group is mapped to one or more LUNs and `allow_delete_while_mapped` has not been specified.
5374760	An error was reported by the peer cluster while deleting a replicated initiator group. The specific error will be included as a nested error.
5374852	The initiator group does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an initiator group

GET `/protocols/san/igroups/{uuid}`

Introduced In: 9.6

Retrieves an initiator group.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `connectivity_tracking.*`
- `igroups.*`
- `lun_maps.*`
- `parent_igroups.*`

Related ONTAP commands

- `lun igroup show`
- `lun mapping show`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the initiator group.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.

Name	Type	Description
igroups	array[igroup_child]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.

Name	Type	Description
initiators	array[initiators]	The initiators that are members of the group or any group nested below this group. Optional in POST. This property is mutually exclusive with the *igroups* property during POST. During GET, this array contains initiators that are members of this group or any nested initiator groups below this group. When initiators of nested groups are returned, they include links to the initiator group that directly contains the initiator. Zero or more initiators can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.

Name	Type	Description
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
replication	replication	Properties related to initiator group replication.

Name	Type	Description
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {
        "summary": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        }
      }
    ],
    "connection_state": "string",
    "required_nodes": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  },
  "igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "igroups": [
```

```
        null
      ],
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "initiators": [
    {
      "_links": {
        "connectivity_tracking": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "connectivity_tracking": {
        "connection_state": "string"
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "iqn.1998-01.com.corp.iscsi:name1",
      "proximity": {
        "peer_svms": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          }
        ]
      }
    }
  ],
  "lun_maps": [
```

```
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "logical_unit_number": 0,
      "lun": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "lun1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "name": "igroup1",
  "os_type": "string",
  "parent_igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "name": "igroup1",
      "parent_igroups": [
        null
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "portset": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "portset1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "protocol": "string",
  "replication": {
    "error": {
      "igroup": {
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "summary": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    },
    "peer_svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "peer1",
      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
    },
    "state": "string"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
```

```
    "firmware_revision": "9111",
    "product_id": "LUN C-Mode",
    "vendor_id": "NETAPP"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374852	The initiator group does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state of the initiator group.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

Name	Type	Description
summary	summary	A user friendly message describing the connection state of the initiator group.

required_nodes

Name	Type	Description
_links	_links	
name	string	
uuid	string	

connectivity_tracking

An overview of the connections to ONTAP by the initiators in this group.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.
required_nodes	array[required_nodes]	Nodes to which the initiators in this group should be connected to ensure reliable service. This is the collection of any node hosting a LUN mapped to this igroup as well as the HA partners of those nodes.

igroup_child

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator.
igroups	array[igroup_child]	Further nested initiator groups.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

connectivity_tracking

A link to the initiator with connectivity information relevant to its membership of this initiator group.

Name	Type	Description
href	string	

self

A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group, the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

Name	Type	Description
href	string	

_links

Name	Type	Description
connectivity_tracking	connectivity_tracking	A link to the initiator with connectivity information relevant to its membership of this initiator group.
self	self	A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group, the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
connection_state	string	Connection state.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

initiators

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
name	string	The FC WWPN, iSCSI IQN, or iSCSI EUI that identifies the host initiator. Valid in POST only and not allowed when the `records` property is used. An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Name	Type	Description
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

lun

The LUN to which the initiator group is mapped.

Name	Type	Description
_links	_links	
name	string	The name of the LUN.
node	node	
uuid	string	The unique identifier of the LUN.

lun_maps

A LUN map with which the initiator group is associated.

Name	Type	Description
_links	_links	
logical_unit_number	integer	The logical unit number assigned to the LUN for initiators in the initiator group.
lun	lun	The LUN to which the initiator group is mapped.

igroup_parent

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator.
name	string	The name of the initiator group.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
uuid	string	The unique identifier of the initiator group.

portset

The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset.

In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored.

Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").

Name	Type	Description
_links	_links	
name	string	The name of the portset.
uuid	string	The unique identifier of the portset.

igroup

Name	Type	Description
local_svm	boolean	Indicates whether the reported igroup is on the local SVM or the peer SVM. When deleting a replicated igroup, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer igroup remains, the peer igroup is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
igroup	igroup	
summary	summary	A user friendly message describing the error.

peer_svm

The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to initiator group replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
peer_svm	peer_svm	The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.
state	string	The state of the replication queue associated with this igroup. If this igroup is not in the replication queue, the state is reported as *ok*. If this igroup is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this igroup is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Properties of the SCSI target to which the initiator group provides access.

Name	Type	Description
firmware_revision	string	The firmware revision of the SCSI target specific to the OS type of the initiator group.

Name	Type	Description
product_id	string	The product ID of the SCSI target.
vendor_id	string	The vendor ID of the SCSI target.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an initiator group

PATCH `/protocols/san/igroups/{uuid}`

Introduced In: 9.6

Updates an initiator group.

Related ONTAP commands

- `lun igroup modify`
- `lun igroup rename`
- `lun igroup bind`
- `lun igroup unbind`

Learn more

- DOC /protocols/san/igroups

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the initiator group.

Request Body

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.

Name	Type	Description
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
replication	replication	Properties related to initiator group replication.
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

Example request

```
{
  "comment": "string",
  "connectivity_tracking": {
    "alerts": [
      {}
    ],
    "connection_state": "string",
    "required_nodes": [
      {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  },
  "lun_maps": [
    {
      "logical_unit_number": 0,
      "lun": {
        "name": "lun1",
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "name": "igroup1",
  "os_type": "string",
  "parent_igroups": [
    {
      "comment": "string",
      "name": "igroup1",
      "parent_igroups": [
        null
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "portset": {
    "name": "portset1",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "replication": {
```

```
    "error": {
      "igroup": {
        "name": "igroup1",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "peer_svm": {
      "name": "peer1",
      "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
    },
    "state": "string"
  },
  "target": {
    "firmware_revision": "9111",
    "product_id": "LUN C-Mode",
    "vendor_id": "NETAPP"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254264	An attempt was made to bind a portset to an initiator group that is already bound to a portset.
5373958	An invalid initiator group name was supplied for a rename operation.
5374023	A rename operation failed because an initiator group with the same name already exists.
5374027	An attempt was made to bind a portset with no member network interfaces to the initiator group.
5374028	An attempt was made to bind a portset with an incompatible protocol to the initiator group.

Error Code	Description
5374733	An initiator is already in another initiator group with a conflicting operating system type.
5374745	An attempt was made to add an initiator group as a child to itself.
5374746	The cluster is currently running in a mixed version and nested initiator groups cannot be created until the effective cluster version reaches 9.9.1.
5374747	The cluster is currently running in a mixed version and initiator group comments cannot be created until the effective cluster version reaches 9.9.1.
5374749	An initiator group's replication peer SVM cannot be changed without first being cleared.
5374759	An error was reported by the peer cluster while modifying a replicated initiator group. The specific error will be included as a nested error.
5374763	An error was reported by the peer cluster while renaming a replicated initiator group. The specific error will be included as a nested error.
5374765	An initiator group cannot be replicated if it has unreplicated child initiator groups.
5374766	A replicated initiator group cannot be changed to unreplicated if it is the child of a replicated initiator group.
5374770	An unreplicated initiator group cannot be changed to replicated due to a conflict in its LUN maps.
5374852	The initiator group does not exist.
5374868	The initiator group was partially modified before an error was encountered while renaming the initiator group.
5375258	The igroup is already replicated to a different peer SVM.
5376253	Initiator group replication requires an effective cluster version of 9.15.1.
5376255	Initiator group replication requires the peer cluster to have an effective cluster version of 9.15.1.
5376488	An NVMe over Fabrics subsystem already exists with the requested name.
6620376	SVM peering information is unavailable.
6620384	The supplied SVMs are not peered.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

summary

A user friendly message describing the connection state of the initiator group.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

alerts

required_nodes

Name	Type	Description
name	string	
uuid	string	

connectivity_tracking

An overview of the connections to ONTAP by the initiators in this group.

Name	Type	Description
alerts	array[alerts]	
connection_state	string	Connection state.

Name	Type	Description
required_nodes	array[required_nodes]	Nodes to which the initiators in this group should be connected to ensure reliable service. This is the collection of any node hosting a LUN mapped to this igroup as well as the HA partners of those nodes.

igroup_child

Name	Type	Description
comment	string	A comment available for use by the administrator.
igroups	array[igroup_child]	Further nested initiator groups.

connectivity_tracking

A link to the initiator with connectivity information relevant to its membership of this initiator group.

Name	Type	Description
href	string	

self

A link to the initiator where mutations can be made. If the initiator is inherited from a nested initiator group, the link refers to the initiator in the nested initiator group. In this case, mutations of the initiator will be applied to all initiator groups referencing the same nested initiator group.

Name	Type	Description
href	string	

connectivity_tracking

Overview of the initiator's connections to ONTAP.

Name	Type	Description
connection_state	string	Connection state.

igroup

The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

peer_svms

A reference to an SVM peer relationship.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

proximity

Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET.

These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

Name	Type	Description
local_svm	boolean	A boolean that indicates if the initiator is proximal to the SVM of the containing initiator group. This is required for any POST or PATCH that includes the `proximity` sub-object.
peer_svms	array[peer_svms]	An array of remote peer SVMs to which the initiator is proximal.

initiators

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	Overview of the initiator's connections to ONTAP. • readOnly: 1 • Introduced in: 9.11
igroup	igroup	The initiator group that directly owns the initiator, which is where modification of the initiator is supported. This property will only be populated when the initiator is a member of a nested initiator group.
proximity	proximity	Properties that define to what SVMs the initiator is proximal. This information is used to properly report active optimized and active non-optimized network paths via ALUA. If no configuration has been specified for an initiator, the sub-object will not be present in GET. These properties can be set via initiator group POST and PATCH and apply to all instances of the initiator in all initiator groups in the SVM and its peers. The `proximity` sub-object for an initiator is set in POST and PATCH in its entirety and replaces any previously set proximity for the initiator within the SVM for the initiator within the SVM. The `local_svm` property must always be set to `true` or `false` when setting the `proximity` property. To clear any previously set proximity, POST or PATCH the `proximity` object to `null`.

node

Name	Type	Description
name	string	
uuid	string	

lun

The LUN to which the initiator group is mapped.

Name	Type	Description
name	string	The name of the LUN.
node	node	
uuid	string	The unique identifier of the LUN.

lun_maps

A LUN map with which the initiator group is associated.

Name	Type	Description
logical_unit_number	integer	The logical unit number assigned to the LUN for initiators in the initiator group.
lun	lun	The LUN to which the initiator group is mapped.

igroup_parent

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	The name of the initiator group.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.
uuid	string	The unique identifier of the initiator group.

portset

The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset.

In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored.

Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").

Name	Type	Description
name	string	The name of the portset.
uuid	string	The unique identifier of the portset.

igroup

Name	Type	Description
local_svm	boolean	Indicates whether the reported igroup is on the local SVM or the peer SVM. When deleting a replicated igroup, the local copy is deleted first and then the peer copy is deleted. If the error is encountered between these two operations and only the peer igroup remains, the peer igroup is reported and the problem might need to be corrected on the peer cluster.
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

summary

A user friendly message describing the error.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering

relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.

Name	Type	Description
igroup	igroup	

peer_svm

The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

replication

Properties related to initiator group replication.

Name	Type	Description
error	error	Information about asynchronous errors encountered while replicating this igroup. Igroups within a peering relationship are replicated in the same stream, so the error reported here might be related to this igroup or a prior replicated igroup that is now blocking the replication of this igroup. Both the error information and the igroup encountering the error are reported. If the error is configuration related, it can be corrected on the referenced igroup. The replication is retried using exponential backoff up to a maximum of one retry every 5 minutes. Every operation on the same stream triggers an immediate retry and restarts the exponential backoff starting with a 1 second delay. If the error is system related, the retries should correct the error when the system enters a healthy state.
peer_svm	peer_svm	The peered SVM to which the initiator group should be replicated. Optional in POST and PATCH. To clear any previously set replication peer, PATCH the `replication.peer_svm` object to `null`.
state	string	The state of the replication queue associated with this igroup. If this igroup is not in the replication queue, the state is reported as *ok*. If this igroup is in the replication queue, but no errors have been encountered, the state is reported as *replicating*. If this igroup is in the replication queue and the queue is blocked by an error, the state is reported as *error*. When in the *error* state, additional context is provided by the `replication.error` property.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Properties of the SCSI target to which the initiator group provides access.

Name	Type	Description
firmware_revision	string	The firmware revision of the SCSI target specific to the OS type of the initiator group.
product_id	string	The product ID of the SCSI target.
vendor_id	string	The vendor ID of the SCSI target.

igroup

An initiator group (igroup) is a collection of Fibre Channel (FC) world wide port names (WWPNs), and/or iSCSI Qualified Names (IQNs), and/or iSCSI EUIs (Extended Unique Identifiers) that identify host endpoints.

Initiator groups are used to control which hosts can access specific LUNs. To grant access to a LUN from one or more hosts, create an initiator group containing the host initiator names, then create a LUN map that associates the initiator group with the LUN.

An initiator group may contain either initiators or other initiator groups, but not both simultaneously. When a parent initiator group is mapped, it inherits all of the initiators of any initiator groups nested below it. If any nested initiator group is modified to contain different initiators, the parent initiator groups inherit the change. A parent can have many nested initiator groups and an initiator group can be nested under multiple parents. Initiators can only be added or removed from the initiator group that directly contains them. The maximum supported depth of nesting is three layers.

Best practice when using nested initiator groups is to match host hierarchies. A single initiator group should correspond to a single host. If a LUN needs to be mapped to multiple hosts, the initiator groups representing those hosts should be aggregated into a parent initiator group and the LUN should be mapped to that initiator group. For multi-ported hosts, initiators have a comment property where the port corresponding to the initiator can be documented.

An initiator can appear in multiple initiator groups. An initiator group can be mapped to multiple LUNs. A specific initiator can be mapped to a specific LUN only once. With the introduction of nestable initiator groups, best practice is to use the hierarchy such that an initiator is only a direct member of a single initiator group, and that initiator group can then be referenced by other initiator groups.

All initiators or nested initiator groups in an initiator group must be from the same operating system. The initiator group's operating system is specified when the initiator group is created.

When an initiator group is created, the `protocol` property is used to restrict member initiators to Fibre Channel (*fcp*), iSCSI (*iscsi*), or both (*mixed*). Initiator groups within a nested hierarchy may not have conflicting protocols.

Zero or more initiators or nested initiator groups can be supplied when the initiator group is created. After creation, initiators can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/initiators` endpoint. Initiator groups containing other initiator groups report the aggregated list of initiators from all nested initiator groups, but modifications of the initiator list must be performed on the initiator group that directly contains the initiators. See DELETE /protocols/san/igroups/{igroup.uuid}/initiators/{name} for more details.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
connectivity_tracking	connectivity_tracking	An overview of the connections to ONTAP by the initiators in this group. • readOnly: 1 • Introduced in: 9.11
delete_on_unmap	boolean	An option that causes the initiator group to be deleted when the last LUN map associated with it is deleted. Optional in POST and PATCH. This property defaults to *false* when the initiator group is created.

Name	Type	Description
lun_maps	array[lun_maps]	All LUN maps with which the initiator is associated. If the requested igroup is part of a remote, non-local, MetroCluster SVM, the LUN maps are not retrieved. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
name	string	The name of the initiator group. Required in POST; optional in PATCH.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system. Required in POST; optional in PATCH.
parent_igroups	array[igroup_parent]	The initiator groups that contain this initiator group as a member.

Name	Type	Description
portset	portset	The portset to which the initiator group is bound. Binding the initiator group to a portset restricts the initiators of the group to accessing mapped LUNs only through network interfaces in the portset. In a nested initiator group hierarchy, only a portset bound to the initiator group at the same level at which it is mapped, applies; portsets bound to parent or child initiator groups are ignored. Optional in POST and PATCH. To unbind a portset from the initiator group, PATCH the `portset` object to `null`, or PATCH `portset.name` to an empty string ("").
replication	replication	Properties related to initiator group replication.
supports_igroups	boolean	An initiator group may contain either initiators or other initiator groups, but not both simultaneously. This property is *true* when initiator groups can be added to this initiator group. The `initiators.name` property cannot be used to determine this via a query because it reports initiators inherited from nested igroups.
target	target	Properties of the SCSI target to which the initiator group provides access.
uuid	string	The unique identifier of the initiator group.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SAN initiators

Protocols SAN initiators endpoint overview

Overview

An initiator is a Fibre Channel (FC) world wide port name (WWPN), an iSCSI Qualified Name (IQN), or an iSCSI EUI (Extended Unique Identifier) that identifies a host endpoint. Initiators are collected into initiator groups (igroups) used to control which hosts can access specific LUNs. Initiators are also discovered as they log in to SAN network LIFs.

ONTAP supports configuration for an initiator. Configured properties apply to all uses of the initiator within an SVM. Although the same initiator may interact with multiple SVMs of a cluster, ONTAP treats initiator configuration as an SVM-scoped activity. For example, a comment may be set for an initiator in a specific SVM. The comment value applies to all uses of the initiator in the SVM including use in multiple initiator groups. But a different comment value may be specified for the same initiator in a different SVM.

The initiator REST API provides read-only access to properties of initiators.

An FC WWPN consists of 16 hexadecimal digits grouped as 8 pairs separated by colons. The format for an iSCSI IQN is *iqn.yyyy-mm.reverse_domain_name:any*. The iSCSI EUI format consists of the *eui.* prefix followed by 16 hexadecimal characters.

Retrieve initiators

GET `/protocols/san/initiators`

Introduced In: 9.14

Retrieves initiators.

Related ONTAP commands

- `lun igroup initiator show`

Learn more

- DOC /protocols/san/initiators

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
protocol	string	query	False	Filter by protocol
comment	string	query	False	Filter by comment • maxLength: 254 • minLength: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[initiator]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "comment": "My initiator comment.",
      "name": "iqn.2018-02.com.netapp.iscsi:name1",
      "protocol": "iscsi",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

The SVM for which the initiator properties are configured.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

initiator

An initiator is a Fibre Channel (FC) world wide port name (WWPN), an iSCSI Qualified Name (IQN), or an iSCSI EUI (Extended Unique Identifier) that identifies a host endpoint. Initiators are collected into initiator groups (igroups) used to control which hosts can access specific LUNs. Initiators are also discovered as they log in to SAN network LIFs.

ONTAP supports configuration for an initiator. Configured properties apply to all uses of the initiator within an SVM. Although the same initiator may interact with multiple SVMs of a cluster, ONTAP treats initiator configuration as an SVM-scoped activity. For example, a comment may be set for an initiator in a specific SVM. The comment value applies to all uses of the initiator in the SVM including use in multiple initiator groups. But a different comment value may be specified for the same initiator in a different SVM.

Name	Type	Description
comment	string	A user-specified comment.
name	string	The name of the initiator.
protocol	string	The protocol of the initiator.
svm	svm	The SVM for which the initiator properties are configured.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an initiator

GET `/protocols/san/initiators/{svm.uuid}/{name}`

Introduced In: 9.14

Retrieves an initiator.

Related ONTAP commands

- `lun igroup initiator show`

Learn more

- DOC /protocols/san/initiators

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which the initiator properties are configured.
name	string	path	True	The name of the initiator.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
comment	string	A user-specified comment.
name	string	The name of the initiator.
protocol	string	The protocol of the initiator.
svm	svm	The SVM for which the initiator properties are configured.

Example response

```
{
  "comment": "My initiator comment.",
  "name": "iqn.2018-02.com.netapp.iscsi:name1",
  "protocol": "iscsi",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

The SVM for which the initiator properties are configured.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage iSCSI credentials

Protocols SAN iSCSI credentials endpoint overview

Overview

An iSCSI credentials object defines authentication credentials to be used between an initiator and ONTAP. It identifies an authentication type, user names, and passwords that must be used to authenticate a specific initiator.

The iSCSI credentials REST API allows you to create, update, delete, and discover iSCSI credentials.

How iSCSI authentication works

An iSCSI credentials object defines the authentication credentials to be used between an initiator and ONTAP. While establishing an iSCSI connection, the initiator sends a login request to ONTAP to begin an iSCSI session. ONTAP then either permits or denies the login request, or determines that a login is not required.

For an initiator, you can specify an authentication type, user names and passwords, and a whitelist of optional network addresses from which the initiator is allowed to connect.

iSCSI authentication methods

- Challenge-Handshake Authentication Protocol (CHAP) - The initiator logs in using a CHAP user name and password. There are two types of CHAP user names and passwords:
  - Inbound - ONTAP authenticates the initiator. Inbound settings are required if you are using CHAP authentication.
  - Outbound - These are optional credentials to enable the initiator to authenticate ONTAP. You can use credentials only if inbound credentials are also being used.
- deny - The initiator is denied access to ONTAP.
- none - ONTAP does not require authentication for the initiator.
  The CHAP inbound/outbound password can be any valid string or an even number of valid hexadecimal digits preceded by '0X' or '0x'.

Initiator address list

The initiator address list is a way to specify valid IP addresses from which the initiator is allowed to connect. If the list is specified and the source address of an iSCSI connection is not in the list, the connection is rejected. Initiator addresses can be specified in either IPv4 or IPv6 format and in one of two forms:

- Range

```
{
  "start": "192.168.0.0",
  "end": "192.168.0.255"
}
```

- Mask

```
{
  "address": "192.168.0.0",
  "netmask": "24"
}
```

Initiator "default"

The default iSCSI authentication definition is created when the iSCSI service is created. An iSCSI credentials object with *default* as the initiator name identifies the default authentication for an SVM. The default credentials are used for any initiator that does not have specific iSCSI credentials. The default iSCSI authentication method is *none*, but can be changed to *deny* or *CHAP*. The default credentials object does not support an initiator address list.

Examples

Creating iSCSI credentials requiring no authentication

```
# The API:
POST /api/protocols/san/iscsi/credentials

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/iscsi/credentials' -H
'Accept: application/hal+json' -d '{ "svm": { "name": "svm1" },
"initiator": "iqn.1992-08.com.netapp:initiator1", "authentication_type":
"none" }'
```

Creating iSCSI credentials using CHAP inbound authentication

```
# The API:
POST /api/protocols/san/iscsi/credentials

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/iscsi/credentials' -H
'Accept: application/hal+json' -d '{ "svm": { "name": "svm1" },
"initiator": "iqn.1992-08.com.netapp:initiator2", "authentication_type":
"CHAP", "chap": { "inbound": { "user": "user1", "password": "password1" }
} }'
```

Retrieving all properties of all iSCSI credentials

The `fields` query parameter is used to request all iSCSI credentials properties.

Passwords are not included in the GET output.

```
# The API:
GET /api/protocols/san/iscsi/credentials

# The call:
curl -X GET 'https://<mgmt-
ip>/api/protocols/san/iscsi/credentials?fields=*' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "default",
    "authentication_type": "none",
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/credentials/19d04b8e-94d7-11e8-
8370-005056b48fd2/default"
      }
    }
  },
  {
    "svm": {
      "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "iqn.1992-08.com.netapp:initiator1",
    "authentication_type": "none",
    "_links": {
      "self": {
```

```
        "href": "/api/protocols/san/iscsi/credentials/19d04b8e-94d7-11e8-
8370-005056b48fd2/iqn.1992-08.com.netapp:initiator1"
      }
    }
  },
  {
    "svm": {
      "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "iqn.1992-08.com.netapp:initiator2",
    "authentication_type": "chap",
    "chap": {
      "inbound": {
        "user": "user1"
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/credentials/19d04b8e-94d7-11e8-
8370-005056b48fd2/iqn.1992-08.com.netapp:initiator2"
      }
    }
  },
  {
    "svm": {
      "uuid": "25f617cf-94d7-11e8-8370-005056b48fd2",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/25f617cf-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "default",
    "authentication_type": "none",
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-
8370-005056b48fd2/default"
      }
```

```
    }
  },
  {
    "svm": {
      "uuid": "25f617cf-94d7-11e8-8370-005056b48fd2",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/25f617cf-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "iqn.1992-08.com.netapp:initiator2",
    "authentication_type": "none",
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-
8370-005056b48fd2/iqn.1992-08.com.netapp:initiator2"
      }
    }
  },
  {
    "svm": {
      "uuid": "25f617cf-94d7-11e8-8370-005056b48fd2",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/25f617cf-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "initiator": "iqn.1992-08.com.netapp:initiator3",
    "authentication_type": "deny",
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-
8370-005056b48fd2/iqn.1992-08.com.netapp:initiator3"
      }
    }
  }
],
"num_records": 6,
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/credentials?fields=*"
  }
```

```
}
}
```

Retrieving specific iSCSI credentials

```
# The API:
GET /api/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}

# The call:
curl -X GET 'https://<mgmt-
ip>/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-8370-
005056b48fd2/iqn.1992-08.com.netapp:initiator2' -H 'Accept:
application/hal+json'

# The response:
{
"svm": {
  "uuid": "25f617cf-94d7-11e8-8370-005056b48fd2",
  "name": "svm2",
  "_links": {
    "self": {
      "href": "/api/svm/svms/25f617cf-94d7-11e8-8370-005056b48fd2"
    }
  }
},
"initiator": "iqn.1992-08.com.netapp:initiator2",
"authentication_type": "chap",
"chap": {
  "inbound": {
    "user": "user1"
  }
},
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-8370-
005056b48fd2/iqn.1992-08.com.netapp:initiator2"
  }
}
}
```

Updating the authentication type of iSCSI credentials

```
# The API:
PATCH /api/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}

# The call:
curl -X PATCH 'https://<mgmt-
ip>/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-8370-
005056b48fd2/iqn.1992-08.com.netapp:initiator2' -H 'Accept:
application/hal+json' -d '{ "authentication_type": "chap", "chap": {
"inbound": { "user": "user1", "password": "password1" } } }'
```

Updating the initiator address list of iSCSI credentials

```
# The API:
PATCH /api/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}

# The call:
curl -X PATCH 'https://<mgmt-
ip>/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-8370-
005056b48fd2/iqn.1992-08.com.netapp:initiator2' -H 'Accept:
application/hal+json' -d '{ "initiator_address": { "ranges": [ { "start":
"192.168.0.0", "end": "192.168.255.255" } ] } }'
```

Deleting iSCSI credentials

```
# The API:
DELETE /api/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}

# The call:
curl -X DELETE 'https://<mgmt-
ip>/api/protocols/san/iscsi/credentials/25f617cf-94d7-11e8-8370-
005056b48fd2/iqn.1992-08.com.netapp:initiator2' -H 'Accept:
application/hal+json'
```

Retrieve iSCSI credentials

GET `/protocols/san/iscsi/credentials`

Introduced In: 9.6

Retrieves iSCSI credentials.

Related ONTAP commands

- `vserver iscsi security show`

Learn more

- DOC /protocols/san/iscsi/credentials

Parameters

Name	Type	In	Required	Description
authentication_type	string	query	False	Filter by authentication_type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
initiator_address.ranges.end	string	query	False	Filter by initiator_address.ranges.end
initiator_address.ranges.family	string	query	False	Filter by initiator_address.ranges.family
initiator_address.ranges.start	string	query	False	Filter by initiator_address.ranges.start
initiator_address.masks.family	string	query	False	Filter by initiator_address.masks.family
initiator_address.masks.netmask	string	query	False	Filter by initiator_address.masks.netmask
initiator_address.masks.address	string	query	False	Filter by initiator_address.masks.address
chap.inbound.user	string	query	False	Filter by chap.inbound.user • maxLength: 128 • minLength: 1

Name	Type	In	Required	Description
chap.outbound.user	string	query	False	Filter by chap.outbound.user • maxLength: 128 • minLength: 1
initiator	string	query	False	Filter by initiator
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[iscsi_credentials]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_type": "string",
      "chap": {
        "inbound": {
          "user": "string"
        },
        "outbound": {
          "user": "string"
        }
      },
      "initiator": "iqn.1998-01.com.corp.iscsi:name1",
      "initiator_address": {
        "masks": [
          {
            "address": "10.10.10.7",
            "family": "string",
            "netmask": "24"
          }
        ],
        "ranges": [
          {
            "end": "10.10.10.7",
            "family": "string",
            "start": "10.10.10.7"
          }
        ]
      },
      "svm": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

inbound

Inbound CHAP credentials.

Name	Type	Description
user	string	The inbound CHAP user name. Optional in POST and PATCH.

outbound

Output CHAP credentials.

To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

Name	Type	Description
user	string	The outbound CHAP user name. Optional in POST and PATCH. To clear previously set outbound CHAP credentials, set this property to an empty string in PATCH.

chap

Challenge-Handshake Authentication Protocol (CHAP) credentials.

Name	Type	Description
inbound	inbound	Inbound CHAP credentials.
outbound	outbound	Output CHAP credentials. To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
start	string	IPv4 or IPv6 address

initiator_address

Initiator address ranges.

Name	Type	Description
masks	array[ip_info]	
ranges	array[ip_address_range]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

iscsi_credentials

Name	Type	Description
_links	_links	
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator	string	The iSCSI initiator to which the credentials apply. Required in POST.
initiator_address	initiator_address	Initiator address ranges.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create iSCSI credentials

POST `/protocols/san/iscsi/credentials`

Introduced In: 9.6

Creates iSCSI credentials.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the iSCSI credentials.
- `initiator` - Initiator for which the iSCSI credentials are to be created.
- `authentication_type` - Type of authentication to use for the credentials.

Recommended optional properties

- `chap.inbound.user` - In-bound CHAP authentication user name.
- `chap.inbound.password` - In-bound CHAP authentication password.
- `chap.outbound.user` - Out-bound CHAP authentication user name.
- `chap.outbound.password` - Out-bound CHAP authentication password.

Related ONTAP commands

- `vserver iscsi security create`

Learn more

- DOC /protocols/san/iscsi/credentials

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator	string	The iSCSI initiator to which the credentials apply. Required in POST.
initiator_address	initiator_address	Initiator address ranges.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "authentication_type": "string",
  "chap": {
    "inbound": {
      "password": "string",
      "user": "string"
    },
    "outbound": {
      "password": "string",
      "user": "string"
    }
  },
  "initiator": "iqn.1998-01.com.corp.iscsi:name1",
  "initiator_address": {
    "masks": [
      {
        "address": "10.10.10.7",
        "netmask": "24"
      }
    ],
    "ranges": [
      {
        "end": "10.10.10.7",
        "start": "10.10.10.7"
      }
    ]
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.

Name	Type	Description
records	array[iscsi_credentials]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "authentication_type": "string",
      "chap": {
        "inbound": {
          "password": "string",
          "user": "string"
        },
        "outbound": {
          "password": "string",
          "user": "string"
        }
      },
      "initiator": "iqn.1998-01.com.corp.iscsi:name1",
      "initiator_address": {
        "masks": [
          {
            "address": "10.10.10.7",
            "netmask": "24"
          }
        ],
        "ranges": [
          {
            "end": "10.10.10.7",
            "start": "10.10.10.7"
          }
        ]
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
2621706	Both the SVM UUID and SVM name were supplied, but they do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373969	A non-empty qualifier is required after the prefix. An example of a valid IQN is *iqn.1995-08.com.example:string*.
5373970	The IQN prefix is invalid. The correct IQN prefix is *iqn*. An example of a valid IQN is *iqn.1995-08.com.example:string*.
5373971	The date field is invalid. A valid date field is *yyyy-mm*. An example of a valid IQN is *iqn.1995-08.com.example:string*.
5373972	The naming authority and string fields can contain only the characters *a-z*, *0-9*, ., :, and -.
5373977	The EUI-64 identifier field must be exactly 16 hexadecimal digits.
5373978	The EUI formatted initiator name supplied is invalid. A valid EUI format is *eui.XXXXXXXXXXXXXXXX*, where X is a hexadecimal digit.
5373997	The initiator name supplied in invalid. The valid initiator name formats are *iqn.1995-08.com.example:string* or *eui.0123456789abcdef*.
5374078	The iSCSI service does not exist.
5374142	An iSCSI security credential already exists for the specified initiator.
5374145	The iSCSI security password must contain an even number of valid hex digits.

Error Code	Description
5374147	The CHAP inbound and outbound passwords must be different.
5374149	The inbound user and password properties are required for CHAP authentication.
5374150	Outbound CHAP authentication requires an outbound password.
5374855	The value for property `initiator_address.ranges.start` is greater than the value for property `initiator_address.ranges.end`.
5374856	The value for property `initiator_address.ranges.start` does not belong to the same IP address family as the value for property `initiator_address.ranges.end`.
5374900	Setting the CHAP authentication properties are not supported with authentication types *none* or *deny*.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

inbound

Inbound CHAP credentials.

Name	Type	Description
password	string	The inbound CHAP password. Write-only; optional in POST and PATCH.
user	string	The inbound CHAP user name. Optional in POST and PATCH.

outbound

Output CHAP credentials.

To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

Name	Type	Description
password	string	The outbound CHAP password. Write-only; optional in POST and PATCH.
user	string	The outbound CHAP user name. Optional in POST and PATCH. To clear previously set outbound CHAP credentials, set this property to an empty string in PATCH.

chap

Challenge-Handshake Authentication Protocol (CHAP) credentials.

Name	Type	Description
inbound	inbound	Inbound CHAP credentials.

Name	Type	Description
outbound	outbound	Output CHAP credentials. To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
start	string	IPv4 or IPv6 address

initiator_address

Initiator address ranges.

Name	Type	Description
masks	array[ip_info]	
ranges	array[ip_address_range]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

iscsi_credentials

Name	Type	Description
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator	string	The iSCSI initiator to which the credentials apply. Required in POST.
initiator_address	initiator_address	Initiator address ranges.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete iSCSI credentials

DELETE `/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}`

Introduced In: 9.6

Deletes specified iSCSI credentials.

Related ONTAP commands

- `vserver iscsi security delete`

Learn more

- DOC /protocols/san/iscsi/credentials

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of an SVM.
initiator	string	path	True	The iSCSI initiator of the credentials object.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
2621706	Both the SVM UUID and SVM name were supplied, but they do not refer to the same SVM.

Error Code	Description
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374148	The default security credential cannot be deleted for an SVM.
5374895	The iSCSI security credential does not exist on the specified SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve specific iSCSI credentials

GET `/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}`

Introduced In: 9.6

Retrieves specified iSCSI credentials.

Related ONTAP commands

- `vserver iscsi security show`

Learn more

- DOC /protocols/san/iscsi/credentials

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of an SVM.
initiator	string	path	True	The iSCSI initiator of the credentials object.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator	string	The iSCSI initiator to which the credentials apply. Required in POST.
initiator_address	initiator_address	Initiator address ranges.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_type": "string",
  "chap": {
    "inbound": {
      "user": "string"
    },
    "outbound": {
      "user": "string"
    }
  },
  "initiator": "iqn.1998-01.com.corp.iscsi:name1",
  "initiator_address": {
    "masks": [
      {
        "address": "10.10.10.7",
        "family": "string",
        "netmask": "24"
      }
    ],
    "ranges": [
      {
        "end": "10.10.10.7",
        "family": "string",
        "start": "10.10.10.7"
      }
    ]
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

inbound

Inbound CHAP credentials.

Name	Type	Description
user	string	The inbound CHAP user name. Optional in POST and PATCH.

outbound

Output CHAP credentials.

To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

Name	Type	Description
user	string	The outbound CHAP user name. Optional in POST and PATCH. To clear previously set outbound CHAP credentials, set this property to an empty string in PATCH.

chap

Challenge-Handshake Authentication Protocol (CHAP) credentials.

Name	Type	Description
inbound	inbound	Inbound CHAP credentials.

Name	Type	Description
outbound	outbound	Output CHAP credentials. To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
start	string	IPv4 or IPv6 address

initiator_address

Initiator address ranges.

Name	Type	Description
masks	array[ip_info]	
ranges	array[ip_address_range]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update iSCSI credentials

PATCH `/protocols/san/iscsi/credentials/{svm.uuid}/{initiator}`

Introduced In: 9.6

Updates specified iSCSI credentials.

Related ONTAP commands

- `vserver iscsi security add-initiator-address-ranges`
- `vserver iscsi security default`
- `vserver iscsi security modify`
- `vserver iscsi security remove-initiator-address-ranges`

Learn more

- DOC /protocols/san/iscsi/credentials

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of an SVM.
initiator	string	path	True	The iSCSI initiator of the credentials object.
add_initiator_addresses	boolean	query	False	If *true*, the initiator addresses in the body merge into the existing addresses in the iSCSI security object rather than replace the existing addresses. • Default value:
remove_initiator_addresses	boolean	query	False	If *true*, the initiator addresses in the body are removed from the existing addresses in the iSCSI security object rather than replace the existing addresses. • Default value:

Request Body

Name	Type	Description
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator_address	initiator_address	Initiator address ranges.

Example request

```
{
  "authentication_type": "string",
  "chap": {
    "inbound": {
      "password": "string",
      "user": "string"
    },
    "outbound": {
      "password": "string",
      "user": "string"
    }
  },
  "initiator_address": {
    "masks": [
      {
        "address": "10.10.10.7",
        "netmask": "24"
      }
    ],
    "ranges": [
      {
        "end": "10.10.10.7",
        "start": "10.10.10.7"
      }
    ]
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.

Error Code	Description
2621706	Both the SVM UUID and SVM name were supplied, but they do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374145	The iSCSI security password must contain an even number of valid hex digits.
5374147	The CHAP inbound and outbound passwords must be different.
5374149	The inbound user and password properties are required for CHAP authentication.
5374150	Outbound CHAP authentication requires an outbound password.
5374155	The functionality is not supported for the default security credential.
5374855	The value for property `initiator_address.ranges.start` is greater than the value for property `initiator_address.ranges.end`.
5374856	The value for property `initiator_address.ranges.start` does not belong to the same IP address family as the value for property `initiator_address.ranges.end`.
5374895	The iSCSI security credential does not exist on the specified SVM.
5374900	Setting the CHAP authentication properties are not supported with authentication types *none* or *deny*.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

inbound

Inbound CHAP credentials.

Name	Type	Description
password	string	The inbound CHAP password. Write-only; optional in POST and PATCH.
user	string	The inbound CHAP user name. Optional in POST and PATCH.

outbound

Output CHAP credentials.

To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

Name	Type	Description
password	string	The outbound CHAP password. Write-only; optional in POST and PATCH.
user	string	The outbound CHAP user name. Optional in POST and PATCH. To clear previously set outbound CHAP credentials, set this property to an empty string in PATCH.

chap

Challenge-Handshake Authentication Protocol (CHAP) credentials.

Name	Type	Description
inbound	inbound	Inbound CHAP credentials.

Name	Type	Description
outbound	outbound	Output CHAP credentials. To clear previously set outbound CHAP credentials, set property `chap.outbound.user` to an empty string in PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

ip_address_range

IP address range

Name	Type	Description
end	string	IPv4 or IPv6 address
start	string	IPv4 or IPv6 address

initiator_address

Initiator address ranges.

Name	Type	Description
masks	array[ip_info]	
ranges	array[ip_address_range]	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

iscsi_credentials

Name	Type	Description
authentication_type	string	The iSCSI authentication type. Required in POST; optional in PATCH.
chap	chap	Challenge-Handshake Authentication Protocol (CHAP) credentials.
initiator_address	initiator_address	Initiator address ranges.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage iSCSI services

Protocols SAN iSCSI services endpoint overview

Overview

An iSCSI service defines the properties of the iSCSI target for an SVM. There can be at most one iSCSI service for an SVM. An SVM's iSCSI service must be created before iSCSI initiators can log in to the SVM.

The iSCSI service REST API allows you to create, update, delete, and discover iSCSI services for SVMs.

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Creating an iSCSI service for an SVM

The simplest way to create an iSCSI service is to specify only the SVM, either by name or UUID. By default, the new iSCSI service is enabled and uses the SVM name as its target alias.

In this example, the `return_records` query parameter is used to retrieve the new iSCSI service object in the REST response.

```
# The API:
POST /api/protocols/san/iscsi/services

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/iscsi/services?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" } }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "enabled": true,
    "target": {
      "name": "iqn.1992-
08.com.netapp:sn.19d04b8e94d711e88370005056b48fd2:vs.4",
      "alias": "svm1"
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-
8370-005056b48fd2"
      }
    }
  }
]
}
```

Retrieving the iSCSI services for all SVMs in the cluster

```
# The API:
GET /api/protocols/san/iscsi/services
```

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/iscsi/services' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-
8370-005056b48fd2"
      }
    }
  },
  {
    "svm": {
      "uuid": "25f617cf-94d7-11e8-8370-005056b48fd2",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/25f617cf-94d7-11e8-8370-005056b48fd2"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/services/25f617cf-94d7-11e8-
8370-005056b48fd2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/services"
```

```
  }
}
}
```

Retrieving details for a specific iSCSI service

The iSCSI service is identified by the UUID of its SVM.

```
# The API:
GET /api/protocols/san/iscsi/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/iscsi/services/19d04b8e-
94d7-11e8-8370-005056b48fd2' -H 'Accept: application/hal+json'

# The response:
{
"svm": {
  "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
    }
  }
},
"enabled": true,
"target": {
  "name": "iqn.1992-
08.com.netapp:sn.19d04b8e94d711e88370005056b48fd2:vs.4",
  "alias": "svm1"
},
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-8370-
005056b48fd2"
  }
}
}
```

Disabling an iSCSI service

Disabling an iSCSI service shuts down all active iSCSI sessions for the SVM and prevents the creation of new iSCSI sessions.

The iSCSI service to update is identified by the UUID of its SVM.

```
# The API:
PATCH /api/protocols/san/iscsi/services/{svm.uuid}

# The call:
curl -X PATCH 'https://<mgmt-
ip>/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-8370-005056b48fd2'
-H 'Accept: application/hal+json' -d '{ "enabled": "false" }'
```

You can retrieve the iSCSI service to confirm the change.

In this example, the `fields` query parameter is used to limit the response to the `enabled` property and iSCSI service identifiers.

```
# The API:
GET /api/protocols/san/iscsi/services/{svm.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/iscsi/services/19d04b8e-
94d7-11e8-8370-005056b48fd2?fields=enabled' -H 'Accept:
application/hal+json'

# The response:
{
"svm": {
  "uuid": "19d04b8e-94d7-11e8-8370-005056b48fd2",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/19d04b8e-94d7-11e8-8370-005056b48fd2"
    }
  }
},
"enabled": false,
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-8370-
005056b48fd2"
  }
}
}
```

Deleting an iSCSI service

The iSCSI service must be disabled before it can be deleted.

The iSCSI service to be deleted is identified by the UUID of its SVM.

```
# The API:
DELETE /api/protocols/san/iscsi/services/{svm.uuid}

# The call:
curl -X DELETE 'https://<mgmt-
ip>/api/protocols/san/iscsi/services/19d04b8e-94d7-11e8-8370-005056b48fd2'
-H 'Accept: application/hal+json'
```

Retrieve iSCSI services

GET `/protocols/san/iscsi/services`

Introduced In: 9.6

Retrieves iSCSI services.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `vserver iscsi show`

Learn more

- DOC /protocols/san/iscsi/services

Parameters

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7

Name	Type	In	Required	Description
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7

Name	Type	In	Required	Description
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
target.name	string	query	False	Filter by target.name • maxLength: 128 • minLength: 1
target.alias	string	query	False	Filter by target.alias • maxLength: 128 • minLength: 1
enabled	boolean	query	False	Filter by enabled
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[iscsi_service]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "statistics": {
        "iops_raw": {
```

```
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "alias": "svm1",
        "name": "iqn.1992-
08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
alias	string	The iSCSI target alias of the iSCSI service. The target alias can contain one (1) to 128 characters and feature any printable character except space (" "). A PATCH request with an empty alias ("") clears the alias. Optional in POST and PATCH. In POST, this defaults to the name of the SVM.

Name	Type	Description
name	string	The iSCSI target name of the iSCSI service. This is generated for the SVM during POST. If required, the target name can be modified using the ONTAP command line. • example: iqn.1992-08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2 • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iscsi_service

An iSCSI service defines the properties of the iSCSI target for an SVM. There can be at most one iSCSI service for an SVM. An SVM's iSCSI service must be created before iSCSI initiators can log in to the SVM.

An iSCSI service is identified by the UUID of its SVM.

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an iSCSI service

POST `/protocols/san/iscsi/services`

Introduced In: 9.6

Creates an iSCSI service.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the iSCSI service.

Related ONTAP commands

- `vserver iscsi create`

Learn more

- DOC /protocols/san/iscsi/services

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "alias": "svm1",
    "name": "iqn.1992-
08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[iscsi_service]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target": {
        "alias": "svm1",
        "name": "iqn.1992-
08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1115127	The cluster lacks a valid iSCSI license.
2621462	The supplied SVM does not exist.
2621507	The iSCSI protocol is not allowed for the specified SVM.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373966	An iSCSI service cannot be created in an SVM that is configured for NVMe.

Error Code	Description
5374077	An iSCSI service already exists for the specified SVM.
5374893	The SVM is stopped. The SVM must be running to create an iSCSI service.
5376452	Service POST and DELETE are not supported on ASA r2.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
alias	string	The iSCSI target alias of the iSCSI service. The target alias can contain one (1) to 128 characters and feature any printable character except space (" "). A PATCH request with an empty alias ("") clears the alias. Optional in POST and PATCH. In POST, this defaults to the name of the SVM.
name	string	The iSCSI target name of the iSCSI service. This is generated for the SVM during POST. If required, the target name can be modified using the ONTAP command line. • example: iqn.1992-08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2 • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iscsi_service

An iSCSI service defines the properties of the iSCSI target for an SVM. There can be at most one iSCSI service for an SVM. An SVM's iSCSI service must be created before iSCSI initiators can log in to the SVM.

An iSCSI service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an iSCSI service

DELETE `/protocols/san/iscsi/services/{svm.uuid}`

Introduced In: 9.6

Deletes an iSCSI service. An iSCSI service must be disabled before it can be deleted.

Related ONTAP commands

- `vserver iscsi delete`

Learn more

- DOC /protocols/san/iscsi/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which to delete the iSCSI service.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5373960	The iSCSI service is enabled. The iSCSI service must be disabled before it can be deleted.
5374078	The SVM does not have an iSCSI service.
5376452	Service POST and DELETE are not supported on ASA r2.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an iSCSI service

GET `/protocols/san/iscsi/services/{svm.uuid}`

Introduced In: 9.6

Retrieves an iSCSI service.

Related ONTAP commands

- `vserver iscsi show`

Learn more

- DOC /protocols/san/iscsi/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which to retrieve the iSCSI service.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
metric	metric	Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	SVM, applies only to SVM-scoped objects.
target	target	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
```

```
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target": {
    "alias": "svm1",
    "name": "iqn.1992-
08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5374078	The SVM does not have an iSCSI service.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
alias	string	The iSCSI target alias of the iSCSI service. The target alias can contain one (1) to 128 characters and feature any printable character except space (" "). A PATCH request with an empty alias ("") clears the alias. Optional in POST and PATCH. In POST, this defaults to the name of the SVM.
name	string	The iSCSI target name of the iSCSI service. This is generated for the SVM during POST. If required, the target name can be modified using the ONTAP command line. • example: iqn.1992-08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2 • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an iSCSI service

PATCH `/protocols/san/iscsi/services/{svm.uuid}`

Introduced In: 9.6

Updates an iSCSI service.

Related ONTAP commands

- `vserver iscsi modify`
- `vserver iscsi start`
- `vserver iscsi stop`

Learn more

- DOC /protocols/san/iscsi/services

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM for which to update the iSCSI service.

Request Body

Name	Type	Description
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
target	target	

Example request

```
{
  "target": {
    "alias": "svm1",
    "name": "iqn.1992-
08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.
5374078	The SVM does not have an iSCSI service.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput for SVM protocols. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

target

Name	Type	Description
alias	string	The iSCSI target alias of the iSCSI service. The target alias can contain one (1) to 128 characters and feature any printable character except space (" "). A PATCH request with an empty alias ("") clears the alias. Optional in POST and PATCH. In POST, this defaults to the name of the SVM.
name	string	The iSCSI target name of the iSCSI service. This is generated for the SVM during POST. If required, the target name can be modified using the ONTAP command line. • example: iqn.1992-08.com.netapp:sn.574caf71890911e8a6b7005056b4ea79:vs.2 • maxLength: 128 • minLength: 1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iscsi_service

An iSCSI service defines the properties of the iSCSI target for an SVM. There can be at most one iSCSI service for an SVM. An SVM's iSCSI service must be created before iSCSI initiators can log in to the SVM.

An iSCSI service is identified by the UUID of its SVM.

Name	Type	Description
enabled	boolean	The administrative state of the iSCSI service. The iSCSI service can be disabled to block all iSCSI connectivity to the SVM. Optional in POST and PATCH. The default setting is *true* (enabled) in POST.
target	target	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the iSCSI protocol of an SVM

GET `/protocols/san/iscsi/services/{svm.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for the iSCSI protocol service of an SVM.

Parameters

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
timestamp	string	query	False	Filter by timestamp
status	string	query	False	Filter by status
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
throughput.write	integer	query	False	Filter by throughput.write
throughput.total	integer	query	False	Filter by throughput.total
throughput.read	integer	query	False	Filter by throughput.read
svm.uuid	string	path	True	The unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "svm": {
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput, for SVM protocols.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for the iSCSI protocol service of an SVM for a specific time

GET `/protocols/san/iscsi/services/{svm.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical performance metrics for the iSCSI protocol service of an SVM for a specific time.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM.
timestamp	string	path	True	The timestamp of the performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "svm": {
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

svm

Name	Type	Description
uuid	string	The unique identifier of the SVM.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

View iSCSI sessions

Protocols SAN iSCSI sessions endpoint overview

Overview

An iSCSI session is one or more TCP connections that link an iSCSI initiator with an iSCSI target. TCP connections can be added and removed from an iSCSI session by the iSCSI initiator. Across all TCP connections within an iSCSI session, an initiator sees one and the same target. After the connection is established, iSCSI control, data, and status messages are communicated over the session.

The iSCSI sessions REST API provides information about iSCSI initiators that have successfully logged in to ONTAP.

Examples

Retrieving all iSCSI sessions

```
# The API:
GET /api/protocols/san/iscsi/sessions

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/san/iscsi/sessions" -H
"Accept: application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "target_portal_group": "iscsi_lif1",
    "tsih": 10,
    "_links": {
      "self": {
```

```
        "href": "/api/protocols/san/iscsi/sessions/a009a9e7-4081-b576-
7575-ada21efcaf16/iscsi_lif1/10"
      }
    }
  },
  {
    "svm": {
      "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm2",
      "_links": {
        "self": {
          "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "target_portal_group": "iscsi_lif2",
    "tsih": 11,
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/sessions/b009a9e7-4081-b576-
7575-ada21efcaf16/iscsi_lif2/11"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/sessions"
  }
}
}
```

Retrieving all of the iSCSI sessions under the target portal group *iscsi_lif1*

The `tpgroup` query parameter is used to perform the query.

```
# The API:
GET /api/protocols/san/iscsi/sessions

# The call:
curl -X GET "https://<mgmt-
ip>/api/protocols/san/iscsi/sessions?tpgroup=iscsi_lif1" -H "Accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a009a9e7-4081-b576-7575-ada21efcaf16"
        }
      }
    },
    "target_portal_group": "iscsi_lif1",
    "tsih": 10,
    "_links": {
      "self": {
        "href": "/api/protocols/san/iscsi/sessions/a009a9e7-4081-b576-
7575-ada21efcaf16/iscsi_lif1/10"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/sessions"
  }
}
}
```

Retrieving an iSCSI session

```
# The API:
GET
```

```
/api/protocols/san/iscsi/sessions/{svm.uuid}/{target_portal_group}/{tsih}

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/san/iscsi/sessions/a009a9e7-
4081-b576-7575-ada21efcaf16/iscsi_lif1/10" -H "Accept:
application/hal+json"

# The response:
{
"svm": {
  "uuid": "a009a9e7-4081-b576-7575-ada21efcaf16",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/a009a9e7-4081-b576-7575-ada21efcaf16"
    }
  }
},
"target_portal_group": "iscsi_lif1",
"tsih": 10,
"initiator": {
  "name": "iqn.1994-05.com.example:string",
  "comment": "Example information about this initiator"
},
"isid": "61:62:63:64:65:00",
"target_portal_group_tag": 1027,
"connections": [
  {
    "cid": 1,
    "authentication_type": "chap",
    "initiator_address": {
      "address": "10.224.123.85",
      "port": 43827
    },
    "interface": {
      "name": "iscsi_lif1",
      "uuid": "c15439b4-dbb4-11e8-90ac-005056bba882",
      "ip": {
        "address": "192.168.0.1",
        "port": 3260
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/interfaces/c15439b4-dbb4-11e8-90ac-
005056bba882"
        }
```

```
      }
    }
  }
],
"igroups": [
  {
    "uuid": "af7838cd-f993-4faf-90b7-5524787ae1e8",
    "name": "igroup1",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/af7838cd-f993-4faf-90b7-
5524787ae1e8"
      }
    }
  },
  {
    "uuid": "bf7838cd-f993-4faf-90b7-5524787ae1e8",
    "name": "igroup2",
    "_links": {
      "self": {
        "href": "/api/protocols/san/igroups/bf7838cd-f993-4faf-90b7-
5524787ae1e8"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/protocols/san/iscsi/sessions/a009a9e7-4081-b576-7575-
ada21efcaf16/iscsi_lif1/10"
  }
}
}
```


Retrieve iSCSI sessions

GET `/protocols/san/iscsi/sessions`

Introduced In: 9.6

Retrieves iSCSI sessions.

Related ONTAP commands

- `vserver iscsi connection show`
- `vserver iscsi session parameter show`

- `vserver iscsi session show`

Learn more

- DOC /protocols/san/iscsi/sessions

Parameters

Name	Type	In	Required	Description
igroups.uuid	string	query	False	Filter by igroups.uuid
igroups.name	string	query	False	Filter by igroups.name • maxLength: 96 • minLength: 1
target_portal_group_tag	integer	query	False	Filter by target_portal_group_tag
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
target_portal_group	string	query	False	Filter by target_portal_group
tsih	integer	query	False	Filter by tsih
isid	string	query	False	Filter by isid
connections.cid	integer	query	False	Filter by connections.cid
connections.initiator_address.port	integer	query	False	Filter by connections.initiator_address.port
connections.initiator_address.address	string	query	False	Filter by connections.initiator_address.address
connections.authentication_type	string	query	False	Filter by connections.authentication_type

Name	Type	In	Required	Description
connections.interface.name	string	query	False	Filter by connections.interface.name
connections.interface.uuid	string	query	False	Filter by connections.interface.uuid
connections.interface.ip.port	integer	query	False	Filter by connections.interface.ip.port • Max value: 65536 • Min value: 1
connections.interface.ip.address	string	query	False	Filter by connections.interface.ip.address
initiator.name	string	query	False	Filter by initiator.name
initiator.comment	string	query	False	Filter by initiator.comment • Introduced in: 9.9
initiator.alias	string	query	False	Filter by initiator.alias
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[iscsi_session]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "connections": [
        {
          "_links": {
            "next": {
              "href": "/api/resourcelink"
            },
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "authentication_type": "string",
          "cid": 0,
          "initiator_address": {
            "address": "10.10.10.7",
            "port": 55432
          },
          "interface": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "ip": {
              "address": "10.10.10.7",
              "port": 3260
            },
            "name": "lif1",
```

```
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "igroups": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "initiator": {
        "alias": "initiator_alias1",
        "comment": "This is an iSCSI initiator for host 5",
        "name": "iqn.1992-01.example.com:string"
      },
      "isid": "61:62:63:64:65:00",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "target_portal_group": "tpgroup1",
      "target_portal_group_tag": 0,
      "tsih": 0
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

initiator_address

The TCP socket information for the initiator end of the connection. This is useful for network packet debugging.

Name	Type	Description
address	string	The TCP IPv4 or IPv6 address of the initiator end of the iSCSI connection.
port	integer	The TCP port number of the initiator end of the iSCSI connection.

ip

The IP information. ONTAP only supports port 3260.

Name	Type	Description
address	string	IPv4 or IPv6 address
port	integer	The TCP port number of the iSCSI access endpoint.

interface

The network interface information for the target end of the connection.

Name	Type	Description
_links	_links	
ip	ip	The IP information. ONTAP only supports port 3260. • readOnly: 1 • Introduced in: 9.6
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

iscsi_connection

An active iSCSI connection.

Name	Type	Description
_links	_links	
authentication_type	string	The iSCSI authentication type used to establish the connection.
cid	integer	The identifier of the connection within the session.
initiator_address	initiator_address	The TCP socket information for the initiator end of the connection. This is useful for network packet debugging.
interface	interface	The network interface information for the target end of the connection.

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiator

The initiator that created the session.

Name	Type	Description
alias	string	The initiator alias.
comment	string	A comment available for use by the administrator. This is modifiable from the initiator REST endpoint directly. See PATCH /protocols/san/igroups/{igroup.uuid}/initiators/{name} .
name	string	The world wide unique name of the initiator.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

iscsi_session

An iSCSI session is one or more TCP connections that link an iSCSI initiator with an iSCSI target. TCP connections can be added and removed from an iSCSI session by the iSCSI initiator. Across all TCP connections within an iSCSI session, an initiator sees one and the same target. After the connection is established, iSCSI control, data, and status messages are communicated over the session.

Name	Type	Description
_links	_links	
connections	array[iscsi_connection]	The iSCSI connections that make up the iSCSI session.
igroups	array[igroups]	The initiator groups in which the initiator is a member.
initiator	initiator	The initiator that created the session.

Name	Type	Description
isid	string	The initiator portion of the session identifier specified by the initiator during login.
svm	svm	SVM, applies only to SVM-scoped objects.
target_portal_group	string	The target portal group to which the session belongs.
target_portal_group_tag	integer	The target portal group tag of the session.
tsih	integer	The target session identifier handle (TSIH) of the session.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an iSCSI session

GET `/protocols/san/iscsi/sessions/{svm.uuid}/{tpgroup}/{tsih}`

Introduced In: 9.6

Retrieves an iSCSI session.

Related ONTAP commands

- `vserver iscsi connection show`
- `vserver iscsi session parameter show`
- `vserver iscsi session show`

Learn more

- DOC /protocols/san/iscsi/sessions

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	The unique identifier of the SVM of the iSCSI session.
tpgroup	string	path	True	The target portal group of the iSCSI session.
tsih	integer	path	True	The target session identifying handle.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
connections	array[iscsi_connection]	The iSCSI connections that make up the iSCSI session.
igroups	array[igroups]	The initiator groups in which the initiator is a member.
initiator	initiator	The initiator that created the session.
isid	string	The initiator portion of the session identifier specified by the initiator during login.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
target_portal_group	string	The target portal group to which the session belongs.
target_portal_group_tag	integer	The target portal group tag of the session.
tsih	integer	The target session identifier handle (TSIH) of the session.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "connections": [
    {
      "_links": {
        "next": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_type": "string",
      "cid": 0,
      "initiator_address": {
        "address": "10.10.10.7",
        "port": 55432
      },
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7",
          "port": 3260
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
```

```
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "initiator": {
    "alias": "initiator_alias1",
    "comment": "This is an iSCSI initiator for host 5",
    "name": "iqn.1992-01.example.com:string"
  },
  "isid": "61:62:63:64:65:00",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "target_portal_group": "tpgroup1",
  "target_portal_group_tag": 0,
  "tsih": 0
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	An SVM with the specified UUID does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

_links

Name	Type	Description
next	href	
self	href	

initiator_address

The TCP socket information for the initiator end of the connection. This is useful for network packet debugging.

Name	Type	Description
address	string	The TCP IPv4 or IPv6 address of the initiator end of the iSCSI connection.
port	integer	The TCP port number of the initiator end of the iSCSI connection.

ip

The IP information. ONTAP only supports port 3260.

Name	Type	Description
address	string	IPv4 or IPv6 address
port	integer	The TCP port number of the iSCSI access endpoint.

interface

The network interface information for the target end of the connection.

Name	Type	Description
_links	_links	
ip	ip	The IP information. ONTAP only supports port 3260. • readOnly: 1 • Introduced in: 9.6
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

iscsi_connection

An active iSCSI connection.

Name	Type	Description
_links	_links	
authentication_type	string	The iSCSI authentication type used to establish the connection.
cid	integer	The identifier of the connection within the session.
initiator_address	initiator_address	The TCP socket information for the initiator end of the connection. This is useful for network packet debugging.
interface	interface	The network interface information for the target end of the connection.

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiator

The initiator that created the session.

Name	Type	Description
alias	string	The initiator alias.
comment	string	A comment available for use by the administrator. This is modifiable from the initiator REST endpoint directly. See PATCH /protocols/san/igroups/{igroup.uuid}/initiators/{name} .
name	string	The world wide unique name of the initiator.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage SAN LUN maps

Protocols SAN lun-maps endpoint overview

Overview

A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between an initiator group and a LUN is many initiator groups to many LUNs.

A LUN map also configures the cluster nodes from which network paths to the LUN are advertised via the SAN protocols as part of the Selective LUN Map (SLM) functionality of ONTAP. These nodes are referred to as the reporting nodes of a LUN map. For further information, see DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes .

The LUN map REST API allows you to create, delete, and discover LUN maps, and manage the reporting nodes of a LUN map.

Examples

Creating a LUN map

```
# The API:
POST /api/protocols/san/lun-maps

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/lun-maps' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "igroup": { "name":
"igroup1" }, "lun": { "name": "/vol/vol1/lun1" } }'
```

Retrieving all of the LUN maps

```
# The API:
GET /api/protocols/san/lun-maps

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/lun-maps' -H 'Accept:
application/hal+json'

# The response:
```

```
{
"records": [
  {
    "svm": {
      "uuid": "03157e81-24c5-11e9-9ec1-005056bba643",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/03157e81-24c5-11e9-9ec1-005056bba643"
        }
      }
    },
    "lun": {
      "uuid": "a60d9862-9bee-49a6-8162-20d2421bb1a6",
      "name": "/vol/vol1/lun1",
      "_links": {
        "self": {
          "href": "/api/storage/luns/a60d9862-9bee-49a6-8162-20d2421bb1a6"
        }
      }
    },
    "igroup": {
      "uuid": "40d98b2c-24c5-11e9-9ec1-005056bba643",
      "name": "ig1",
      "_links": {
        "self": {
          "href": "/api/protocols/san/igroups/40d98b2c-24c5-11e9-9ec1-
005056bba643"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/lun-maps/a60d9862-9bee-49a6-8162-
20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/protocols/san/lun-maps"
  }
}
}
```

Retrieving a specific LUN map

```
# The API:
GET /api/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/lun-maps/a60d9862-9bee-
49a6-8162-20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643' -H 'Accept:
application/hal+json'

# The response:
{
"svm": {
  "uuid": "03157e81-24c5-11e9-9ec1-005056bba643",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/03157e81-24c5-11e9-9ec1-005056bba643"
    }
  }
},
"lun": {
  "uuid": "a60d9862-9bee-49a6-8162-20d2421bb1a6",
  "name": "/vol/vol1/lun1",
  "node": {
    "uuid": "7d8607ea-24c1-11e9-9ec1-005056bba643",
    "name": "node1",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/7d8607ea-24c1-11e9-9ec1-005056bba643"
      }
    }
  },
  "smbc": {
    "replicated": false
  },
  "_links": {
    "self": {
      "href": "/api/storage/luns/a60d9862-9bee-49a6-8162-20d2421bb1a6"
    }
  }
},
"igroup": {
  "uuid": "40d98b2c-24c5-11e9-9ec1-005056bba643",
  "name": "ig1",
  "os_type": "linux",
```

```
  "protocol": "mixed",
  "replicated": false,
  "_links": {
    "self": {
      "href": "/api/protocols/san/igroups/40d98b2c-24c5-11e9-9ec1-
005056bba643"
    }
  }
},
"logical_unit_number": 0,
"reporting_nodes": [
  {
    "uuid": "11a465f5-2ac0-11eb-a303-005056bb1e81",
    "name": "node1",
    "_links": {
      "node": {
        "href": "/cluster/nodes/11a465f5-2ac0-11eb-a303-005056bb1e81"
      },
      "self": {
        "href": "/api/protocols/san/lun-maps/a60d9862-9bee-49a6-8162-
20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643/reporting-
nodes/11a465f5-2ac0-11eb-a303-005056bb1e81"
      }
    }
  },
  {
    "uuid": "6c7cb50f-2abf-11eb-9840-005056bbd490",
    "name": "node2",
    "_links": {
      "node": {
        "href": "/cluster/nodes/6c7cb50f-2abf-11eb-9840-005056bbd490"
      },
      "self": {
        "href": "/api/protocols/san/lun-maps/a60d9862-9bee-49a6-8162-
20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643/reporting-
nodes/6c7cb50f-2abf-11eb-9840-005056bbd490"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/protocols/san/lun-maps/a60d9862-9bee-49a6-8162-
20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643"
  }
}
```

```
}
```

Deleting a LUN map

```
# The API:
DELETE /api/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/lun-maps/a60d9862-
9bee-49a6-8162-20d2421bb1a6/40d98b2c-24c5-11e9-9ec1-005056bba643' -H
'Accept: application/hal+json'
```

Retrieve LUN maps

GET `/protocols/san/lun-maps`

Introduced In: 9.6

Retrieves LUN maps.

Related ONTAP commands

- `lun mapping show`

Learn more

- DOC /protocols/san/lun-maps

Parameters

Name	Type	In	Required	Description
igroup.uuid	string	query	False	Filter by igroup.uuid
igroup.replicated	boolean	query	False	Filter by igroup.replicated • Introduced in: 9.15
igroup.protocol	string	query	False	Filter by igroup.protocol
igroup.initiators	string	query	False	Filter by igroup.initiators

Name	Type	In	Required	Description
igroup.os_type	string	query	False	Filter by igroup.os_type
igroup.name	string	query	False	Filter by igroup.name
lun.name	string	query	False	Filter by lun.name
lun.uuid	string	query	False	Filter by lun.uuid
lun.node.name	string	query	False	Filter by lun.node.name
lun.node.uuid	string	query	False	Filter by lun.node.uuid
lun.smbc.replicated	boolean	query	False	Filter by lun.smbc.replicated • Introduced in: 9.15
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
reporting_nodes.name	string	query	False	Filter by reporting_nodes.name • Introduced in: 9.10
reporting_nodes.uuid	string	query	False	Filter by reporting_nodes.uuid • Introduced in: 9.10
logical_unit_number	integer	query	False	Filter by logical_unit_number • Max value: 4095 • Min value: 0

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.

Name	Type	Description
records	array[lun_map]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "initiators": [
          "iqn.1998-01.com.corp.iscsi:name1"
        ],
        "name": "igroup1",
        "os_type": "string",
        "protocol": "string",
        "uuid": "1ad8544d-8cd1-91e0-9e1c-723478563412"
      },
      "logical_unit_number": 1,
      "lun": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/volume1/qtree1/lun1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
```

```
            },
            "name": "node1",
            "uuid": "1cf8aa42-8cd1-12e0-a11c-423468563412"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "reporting_nodes": [
          {
            "_links": {
              "node": {
                "href": "/api/resourcelink"
              },
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
          }
        ],
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

igroup

The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.

Name	Type	Description
_links	_links	
initiators	array[string]	The initiators that are members of the initiator group.
name	string	The name of the initiator group. Valid in POST.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group.
replicated	boolean	This property reports if the initiator group is replicated.
uuid	string	The unique identifier of the initiator group. Valid in POST.

node

The LUN node.

Name	Type	Description
_links	_links	
name	string	The name of the LUN's node.
uuid	string	The unique identifier of the LUN node.

smbc

"Properties related to SM-BC replication."

Name	Type	Description
replicated	boolean	This property reports if the LUN is replicated via SM-BC.

lun

The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.

Name	Type	Description
_links	_links	
name	string	The name of the LUN. Valid in POST. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	The LUN node.
smbc	smbc	"Properties related to SM-BC replication."
uuid	string	The unique identifier of the LUN. Valid in POST.

_links

Name	Type	Description
node	href	
self	href	

reporting_nodes

A cluster node from which network paths to the LUN are advertised by ONTAP via the SAN protocols.

Name	Type	Description
_links	_links	
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

lun_map

A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
_links	_links	

Name	Type	Description
igroup	igroup	The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. • example: 1 • Max value: 4095 • Min value: 0 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
lun	lun	The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.

Name	Type	Description
reporting_nodes	array[reporting_nodes]	The cluster nodes from which network paths to the mapped LUNs are advertised via the SAN protocols as part of the Selective LUN Map (SLM) feature of ONTAP. When a LUN map is created, the cluster node hosting the LUN and its high availability (HA) partner are set as the default reporting node. In POST, the property `additional_reporting_node` may be used to add an additional node and its HA partner. For further information, see DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes . • readOnly: 1 • Introduced in: 9.10
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a LUN map

POST `/protocols/san/lun-maps`

Introduced In: 9.6

Creates a LUN map.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the LUN map.
- `igroup.uuid` or `igroup.name` - Existing initiator group to map to the specified LUN.
- `lun.uuid` or `lun.name` - Existing LUN to map to the specified initiator group.

Default property values

If not specified in POST, the following default property values are assigned.

- `logical_unit_number` - If no value is provided, ONTAP assigns the lowest available value.

Related ONTAP commands

- `lun mapping create`

Learn more

- DOC /protocols/san/lun-maps

Parameters

Name	Type	In	Required	Description
additional_reporting_node.uuid	string	query	False	The unique identifier of an ONTAP cluster node to add to the default reporting nodes for the LUN map. The HA partner for the node is also added. • Introduced in: 9.10

Name	Type	In	Required	Description
additional_reporting_node.name	string	query	False	The name of an ONTAP cluster node to add to the default reporting nodes for the LUN map. The HA partner for the node is also added. • Introduced in: 9.10
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
igroup	igroup	The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. • example: 1 • Max value: 4095 • Min value: 0 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

Name	Type	Description
lun	lun	The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.
reporting_nodes	array[reporting_nodes]	The cluster nodes from which network paths to the mapped LUNs are advertised via the SAN protocols as part of the Selective LUN Map (SLM) feature of ONTAP. When a LUN map is created, the cluster node hosting the LUN and its high availability (HA) partner are set as the default reporting node. In POST, the property `additional_reporting_node` may be used to add an additional node and its HA partner. For further information, see DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes . • readOnly: 1 • Introduced in: 9.10
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "igroup": {
    "initiators": [
      "iqn.1998-01.com.corp.iscsi:name1"
    ],
    "name": "igroup1",
    "os_type": "string",
    "protocol": "string",
    "uuid": "1ad8544d-8cd1-91e0-9e1c-723478563412"
  },
  "logical_unit_number": 1,
  "lun": {
    "name": "/vol/volume1/qtree1/lun1",
    "node": {
      "name": "node1",
      "uuid": "1cf8aa42-8cd1-12e0-a11c-423468563412"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "reporting_nodes": [
    {
      "name": "node1",
      "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
    }
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[lun_map]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "igroup": {
        "initiators": [
          "iqn.1998-01.com.corp.iscsi:name1"
        ],
        "name": "igroup1",
        "os_type": "string",
        "protocol": "string",
        "uuid": "1ad8544d-8cd1-91e0-9e1c-723478563412"
      },
      "logical_unit_number": 1,
      "lun": {
        "name": "/vol/volume1/qtree1/lun1",
        "node": {
          "name": "node1",
          "uuid": "1cf8aa42-8cd1-12e0-a11c-423468563412"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "reporting_nodes": [
        {
          "name": "node1",
          "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
        }
      ],
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254201	The specified LUN does not exist.
1254207	The LUN is already mapped to the same initiator group.
2621462	The specified SVM does not exist or is not accessible to the caller.
2621706	Both the SVM UUID and SVM name were supplied, but don't refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374053	The LUN is the destination of an ongoing restore operation and is inaccessible for I/O and management. Wait for the restore to complete and try the command again.
5374127	The specified LUN name is invalid.
5374238	The operation is not allowed on a LUN in a snapshot.
5374316	A LUN move operation is in progress on the source LUN.
5374329	A LUN of class `vvol` cannot be mapped.
5374573	A node has no interface configured with the iSCSI or Fibre Channel protocols for the specified SVM.
5374574	Multiple nodes have no interface configured with the iSCSI or Fibre Channel protocols for the specified SVM.
5374581	A node has no interface configured with the iSCSI protocol for the specified SVM.
5374582	Multiple nodes have no interface configured with the iSCSI protocol for the specified SVM.
5374583	A node has no interface configured with the Fibre Channel protocol for the specified SVM.
5374584	Multiple nodes have no interface configured with the Fibre Channel protocol for the specified SVM.
5374652	An error was reported by the peer cluster while creating a replicated LUN map. The specific error will be included as a nested error.

Error Code	Description
5374901	Either `lun.uuid` or `lun.name` must be provided to create a LUN map.
5374902	Either `igroup.uuid` or `igroup.name` must be provided to create a LUN map.
5374920	The cluster node specified in additional_reporting_node does not exist.
5374921	The cluster node name and UUID specified in additional_reporting_node do not refer to the same cluster node.
5376356	The LUN is part of a SnapMirror active sync relationship that has a different SVM peering relationship than the igroup.
5376461	The specified LUN name is invalid.
5376462	The specified LUN name is too long.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

igroup

The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.

Name	Type	Description
initiators	array[string]	The initiators that are members of the initiator group.
name	string	The name of the initiator group. Valid in POST.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group.
replicated	boolean	This property reports if the initiator group is replicated.
uuid	string	The unique identifier of the initiator group. Valid in POST.

node

The LUN node.

Name	Type	Description
name	string	The name of the LUN's node.
uuid	string	The unique identifier of the LUN node.

smbc

"Properties related to SM-BC replication."

Name	Type	Description
replicated	boolean	This property reports if the LUN is replicated via SM-BC.

lun

The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.

Name	Type	Description
name	string	The name of the LUN. Valid in POST. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	The LUN node.
smbc	smbc	"Properties related to SM-BC replication."
uuid	string	The unique identifier of the LUN. Valid in POST.

reporting_nodes

A cluster node from which network paths to the LUN are advertised by ONTAP via the SAN protocols.

Name	Type	Description
_links	_links	
name	string	The name of the node. Either `uuid` or `name` are required in POST.

Name	Type	Description
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

lun_map

A LUN map is an association between a LUN and an initiator group. When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.

Name	Type	Description
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. • example: 1 • Max value: 4095 • Min value: 0 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
lun	lun	The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.
reporting_nodes	array[reporting_nodes]	The cluster nodes from which network paths to the mapped LUNs are advertised via the SAN protocols as part of the Selective LUN Map (SLM) feature of ONTAP. When a LUN map is created, the cluster node hosting the LUN and its high availability (HA) partner are set as the default reporting node. In POST, the property `additional_reporting_node` may be used to add an additional node and its HA partner. For further information, see DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes . • readOnly: 1 • Introduced in: 9.10

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a LUN map

DELETE `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}`

Introduced In: 9.6

Deletes a LUN map.

Related ONTAP commands

- `lun mapping delete`

Learn more

- DOC /protocols/san/lun-maps

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	
igroup.uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN does not exist or is not accessible to the caller.
5374878	The specified initiator group does not exist, is not accessible to the caller, or is not in the same SVM as the specified LUN.
5374922	The specified LUN map does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a LUN map

GET `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}`

Introduced In: 9.6

Retrieves a LUN map.

Related ONTAP commands

- `lun mapping show`

Learn more

- DOC /protocols/san/lun-maps

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
igroup.uuid	string	path	True	The unique identifier of the igroup.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. • example: 1 • Max value: 4095 • Min value: 0 • Introduced in: 9.6 • readCreate: 1 • x-nullable: true
lun	lun	The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.

Name	Type	Description
reporting_nodes	array[reporting_nodes]	The cluster nodes from which network paths to the mapped LUNs are advertised via the SAN protocols as part of the Selective LUN Map (SLM) feature of ONTAP. When a LUN map is created, the cluster node hosting the LUN and its high availability (HA) partner are set as the default reporting node. In POST, the property `additional_reporting_node` may be used to add an additional node and its HA partner. For further information, see DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes . • readOnly: 1 • Introduced in: 9.10
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "igroup": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "initiators": [
      "iqn.1998-01.com.corp.iscsi:name1"
    ],
    "name": "igroup1",
    "os_type": "string",
    "protocol": "string",
    "uuid": "1ad8544d-8cd1-91e0-9e1c-723478563412"
  },
  "logical_unit_number": 1,
  "lun": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "/vol/volume1/qtree1/lun1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cf8aa42-8cd1-12e0-a11c-423468563412"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "reporting_nodes": [
    {
      "_links": {
        "node": {
          "href": "/api/resourcelink"
```

```
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374852	The initiator group does not exist or is not accessible to the caller.
5374875	The LUN does not exist or is not accessible to the caller.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

igroup

The initiator group to which the LUN is mapped. Required in POST by supplying either the `igroup.uuid`, `igroup.name`, or both.

Name	Type	Description
_links	_links	
initiators	array[string]	The initiators that are members of the initiator group.
name	string	The name of the initiator group. Valid in POST.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group.
replicated	boolean	This property reports if the initiator group is replicated.
uuid	string	The unique identifier of the initiator group. Valid in POST.

node

The LUN node.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the LUN's node.
uuid	string	The unique identifier of the LUN node.

smbc

"Properties related to SM-BC replication."

Name	Type	Description
replicated	boolean	This property reports if the LUN is replicated via SM-BC.

lun

The LUN to which the initiator group is mapped. Required in POST by supplying either the `lun.uuid`, `lun.name`, or both.

Name	Type	Description
_links	_links	
name	string	The name of the LUN. Valid in POST. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
node	node	The LUN node.
smbc	smbc	"Properties related to SM-BC replication."
uuid	string	The unique identifier of the LUN. Valid in POST.

_links

Name	Type	Description
node	href	
self	href	

reporting_nodes

A cluster node from which network paths to the LUN are advertised by ONTAP via the SAN protocols.

Name	Type	Description
_links	_links	
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Add, remove, or discover LUN map reporting nodes

Protocols SAN lun-maps lun.uuid igroup.uuid reporting-nodes endpoint overview

Overview

A LUN map's reporting nodes are the cluster nodes from which network paths to a mapped LUN are advertised via the SAN protocols as part of the Selective LUN Map (SLM) feature of ONTAP. SLM reduces the number of paths from the host to a mapped LUN and enables management of a single initiator group (igroup) per host.

If there are no reporting nodes in a LUN map, network paths to all cluster nodes having the appropriate network interfaces (LIFs) in the SVM are advertised. This is not a typical configuration and is reserved for limited specific use cases. Note that having no reporting nodes in a LUN map differs subtly from having all reporting nodes in the LUN map. If a LUN map has an empty reporting nodes list and a new node is added to the cluster, a path to the new node will also be advertised. If a LUN map has all cluster nodes in its reporting nodes list and a new node is added to the cluster, a path to the new node is not advertised unless the LUN map's reporting nodes are explicitly updated to include the new node.

If portsets are used to further restrict access for initiators to specific LIFs, the mapped LUN will be accessible only via the LIFs in the portset that are on the reporting nodes of the LUN map.

When a LUN map is created, the cluster node hosting the mapped LUN and its high availability (HA) partner are set as the initial reporting nodes.

Before moving a mapped LUN or a volume containing mapped LUNs to another HA pair within the same cluster, the destination node should be added to the LUN map's reporting nodes. This ensures that active, optimized LUN paths are maintained. After moving a mapped LUN or a volume containing mapped LUNs to another HA pair within the same cluster, the cluster node that previously hosted the mapped LUN should be removed from the LUN map's reporting node. Further details for this workflow may be found in the ONTAP SAN Administration documentation - see `Modifying the SLM reporting-nodes list`.

Examples

Adding a node to a LUN map

This example adds a cluster node, and its high availability (HA) partner cluster node, to a LUN map's reporting nodes.

```
# The API:
POST /api/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/lun-maps/c8ad35ce-ef03-
4577-88f0-9ad150ac6bbf/b10a8165-8346-11eb-ab8e-005056bbb402/reporting-
nodes' -H 'Accept: application/hal+json' -d '{ "name": "node2" }'
```

Removing a node from a LUN map

This example removes a cluster node, and its high availability (HA) partner cluster node, from a LUN map's reporting nodes.

```
# The API:
DELETE /api/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-
nodes/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/lun-maps/c8ad35ce-
ef03-4577-88f0-9ad150ac6bbf/b10a8165-8346-11eb-ab8e-
005056bbb402/reporting-nodes/6d2cd7d5-493a-daf8-9ae1-219e4ad6f77d' -H
'Accept: application/hal+json'
```

Retrieve LUN map reporting nodes

GET `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes`

Introduced In: 9.10

Retrieves LUN map reporting nodes.

Related ONTAP commands

- `lun mapping show`

Learn more

- DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the igroup.
uuid	string	query	False	Filter by uuid
name	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[lun_map_reporting_node]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "node": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "lun": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "node1",
      "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN does not exist or is not accessible to the caller.
5374878	The specified initiator group does not exist, is not accessible to the caller, or is not in the same SVM as the specified LUN.
5374922	The specified LUN map does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
node	href	
self	href	

_links

Name	Type	Description
self	href	

igroup

The initiator group of the LUN map of the reporting node.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the initiator group.

lun

The LUN of the LUN map of the reporting node.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the LUN.

lun_map_reporting_node

A cluster node from which network paths to the LUN are advertised by ONTAP via the SAN protocols.

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group of the LUN map of the reporting node.
lun	lun	The LUN of the LUN map of the reporting node.
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a reporting node and its HA partner to a LUN map

POST `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes`

Introduced In: 9.10

Adds a reporting node and its HA partner to a LUN map.

Required properties

- `uuid` or `name` - A cluster node to add.

Related ONTAP commands

- `lun mapping add-reporting-nodes`

Learn more

- DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
igroup.uuid	string	path	True	The unique identifier of the igroup.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group of the LUN map of the reporting node.
lun	lun	The LUN of the LUN map of the reporting node.
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

Example request

```
{
  "igroup": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "lun": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "node1",
  "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[lun_map_reporting_node]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "igroup": {
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "lun": {
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "node1",
      "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN does not exist or is not accessible to the caller.
5374878	The specified initiator group does not exist, is not accessible to the caller, or is not in the same SVM as the specified LUN.
5374920	The specified cluster node does not exist.
5374921	The specified cluster node name and UUID do not refer to the same cluster node.
5374922	The specified LUN map does not exist.
5374923	A cluster node `uuid` or `name` must be specified to add a reporting node.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

igroup

The initiator group of the LUN map of the reporting node.

Name	Type	Description
uuid	string	The unique identifier of the initiator group.

lun

The LUN of the LUN map of the reporting node.

Name	Type	Description
uuid	string	The unique identifier of the LUN.

lun_map_reporting_node

A cluster node from which network paths to the LUN are advertised by ONTAP via the SAN protocols.

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group of the LUN map of the reporting node.
lun	lun	The LUN of the LUN map of the reporting node.
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Remove a reporting node and its HA partner from a LUN map

DELETE `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes/{uuid}`

Introduced In: 9.10

Removes a reporting node and its HA partner from a LUN map.

Related ONTAP commands

- `lun mapping remove-reporting-nodes`

Learn more

- DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	
igroup.uuid	string	path	True	
uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374608	An attempt was made to delete the last reporting node for a LUN. The REST API requires that a LUN map must maintain at least one reporting node.
5374875	The specified LUN does not exist or is not accessible to the caller.
5374878	The specified initiator group does not exist, is not accessible to the caller, or is not in the same SVM as the specified LUN.
5374922	The specified LUN map does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a LUN map reporting node

GET `/protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes/{uuid}`

Introduced In: 9.10

Retrieves a LUN map reporting node.

Related ONTAP commands

- `lun mapping show`

Learn more

- DOC /protocols/san/lun-maps/{lun.uuid}/{igroup.uuid}/reporting-nodes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.

Name	Type	In	Required	Description
igroup.uuid	string	path	True	The unique identifier of the igroup.
uuid	string	path	True	The unique identifier of the node.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group of the LUN map of the reporting node.
lun	lun	The LUN of the LUN map of the reporting node.
name	string	The name of the node. Either `uuid` or `name` are required in POST.
uuid	string	The unique identifier of the node. Either `uuid` or `name` are required in POST.

Example response

```
{
  "_links": {
    "node": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "igroup": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "lun": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "node1",
  "uuid": "5ac8eb9c-4e32-dbaa-57ca-fb905976f54e"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN does not exist or is not accessible to the caller.
5374878	The specified initiator group does not exist, is not accessible to the caller, or is not in the same SVM as the specified LUN.

Error Code	Description
5374922	The specified LUN map does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
node	href	
self	href	

_links

Name	Type	Description
self	href	

igroup

The initiator group of the LUN map of the reporting node.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the initiator group.

lun

The LUN of the LUN map of the reporting node.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the LUN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SAN portsets

Protocols SAN portsets endpoint overview

Overview

A portset is a collection of Fibre Channel Protocol and/or iSCSI network interfaces from the portset's SVM.

Portsets are used to limit the network interfaces through which an initiator can connect to mapped LUNs. When a portset is bound to an initiator group (igroup), and the initiator group is mapped to a LUN, the initiators of the initiator group can only reach the LUN through the network interfaces in the portset.

Portsets are not recommended for new configurations. With modern releases of ONTAP, it is recommended to use multiple SVMs and initiator groups with no bound portset to load balance applications over multiple ports on a node. Selective LUN mapping will automatically limit the number of visible paths to a LUN from the client host to those required for efficient access and high availability. The REST portset API is primarily intended for legacy use.

The portset REST API allows you to create, delete, and discover portsets, and to add and remove network interfaces from portsets.

A portset can be bound to one or more initiator groups. An initiator group (igroup) can be bound to at most one portset.

When a portset is created, the `protocol` property is used to restrict member network interfaces to Fibre Channel Protocol (*fcp*), iSCSI (*iscsi*), or both (*mixed*).

Zero or more network interfaces can be supplied when the portset is created. After creation, network interfaces can be added to or removed from the portset using the `/protocols/san/portsets/{portset.uuid}/interfaces` endpoint. See DELETE /protocols/san/portsets/{portset.uuid}/interfaces/{name} for more details.

Examples

Creating a portset with no network interfaces

The example portset uses the default `mixed` protocol. Note that the `return_records` query parameter is used to obtain the newly created portset in the response.

```
# The API:
POST /api/protocols/san/portsets

# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/portsets?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm" : { "name": "svm1" }, "name": "portset1"
}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "5d7b1dfa-1ed7-11eb-8b0f-005056bb3521",
    "svm": {
      "uuid": "31484775-1e23-11eb-b2a8-005056bb3521",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/31484775-1e23-11eb-b2a8-005056bb3521"
        }
      }
    },
    "name": "portset1",
    "protocol": "mixed",
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/5d7b1dfa-1ed7-11eb-8b0f-
005056bb3521"
      }
    }
  }
]
}
```

Creating an iSCSI portset with two network interfaces

Note that the `return_records` query parameter is used to obtain the newly created portset in the response.

```
# The API:
POST /api/protocols/san/portsets
```

```
# The call:
curl -X POST 'https://<mgmt-
ip>/api/protocols/san/portsets?return_records=true' -H 'Accept:
application/hal+json' -d '{ "svm" : { "name": "svm1" }, "name":
"portset2", "protocol": "iscsi", "interfaces": [ { "ip": { "name": "lif1"
} }, { "ip": { "name": "lif2" } } ] }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "816c0d49-1ed7-11eb-8b0f-005056bb3521",
    "svm": {
      "uuid": "31484775-1e23-11eb-b2a8-005056bb3521",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/31484775-1e23-11eb-b2a8-005056bb3521"
        }
      }
    },
    "name": "portset2",
    "protocol": "iscsi",
    "interfaces": [
      {
        "uuid": "f37bfb01-1e2a-11eb-b2a8-005056bb3521",
        "ip": {
          "uuid": "f37bfb01-1e2a-11eb-b2a8-005056bb3521",
          "name": "lif1",
          "ip": {
            "address": "192.168.1.100"
          },
          "_links": {
            "self": {
              "href": "/api/network/ip/interfaces/f37bfb01-1e2a-11eb-b2a8-
005056bb3521"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/portsets/816c0d49-1ed7-11eb-8b0f-
005056bb3521/interfaces/f37bfb01-1e2a-11eb-b2a8-005056bb3521"
          }
        }
```

```
      },
      {
        "uuid": "f92178e7-1e2a-11eb-b2a8-005056bb3521",
        "ip": {
          "uuid": "f92178e7-1e2a-11eb-b2a8-005056bb3521",
          "name": "lif2",
          "ip": {
            "address": "192.168.1.101"
          },
          "_links": {
            "self": {
              "href": "/api/network/ip/interfaces/f92178e7-1e2a-11eb-b2a8-
005056bb3521"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/protocols/san/portsets/816c0d49-1ed7-11eb-8b0f-
005056bb3521/interfaces/f92178e7-1e2a-11eb-b2a8-005056bb3521"
          }
        }
      }
    ],
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/816c0d49-1ed7-11eb-8b0f-
005056bb3521"
      }
    }
  }
]
}
```

Retrieving a summary of all portsets

```
# The API:
GET /api/protocols/san/portsets

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/portsets' -H 'Accept:
application/hal+json'

# The response:
```

```
{
"records": [
  {
    "uuid": "5d7b1dfa-1ed7-11eb-8b0f-005056bb3521",
    "name": "portset1",
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/5d7b1dfa-1ed7-11eb-8b0f-
005056bb3521"
      }
    }
  },
  {
    "uuid": "816c0d49-1ed7-11eb-8b0f-005056bb3521",
    "name": "portset2",
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/816c0d49-1ed7-11eb-8b0f-
005056bb3521"
      }
    }
  },
  {
    "uuid": "b716b4d2-1ed7-11eb-8b0f-005056bb3521",
    "name": "portset3",
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/b716b4d2-1ed7-11eb-8b0f-
005056bb3521"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/protocols/san/portsets"
  }
}
}
```


Retrieving details for a specific portset

```
# The API:
```

```
GET /api/protocols/san/portsets/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/portsets/b716b4d2-1ed7-
11eb-8b0f-005056bb3521' -H 'Accept: application/hal+json'

# The response:
{
"uuid": "b716b4d2-1ed7-11eb-8b0f-005056bb3521",
"svm": {
  "uuid": "31484775-1e23-11eb-b2a8-005056bb3521",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/31484775-1e23-11eb-b2a8-005056bb3521"
    }
  }
},
"name": "portset3",
"protocol": "fcp",
"interfaces": [
  {
    "uuid": "164eb052-1e2b-11eb-b2a8-005056bb3521",
    "fc": {
      "uuid": "164eb052-1e2b-11eb-b2a8-005056bb3521",
      "name": "lif5",
      "wwpn": "20:01:00:50:56:bb:35:21",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/164eb052-1e2b-11eb-b2a8-
005056bb3521"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/b716b4d2-1ed7-11eb-8b0f-
005056bb3521/interfaces/164eb052-1e2b-11eb-b2a8-005056bb3521"
      }
    }
  },
  {
    "uuid": "197ba2b7-1e2b-11eb-b2a8-005056bb3521",
    "fc": {
      "uuid": "197ba2b7-1e2b-11eb-b2a8-005056bb3521",
      "name": "lif6",
```

```
      "wwpn": "20:02:00:50:56:bb:35:21",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/197ba2b7-1e2b-11eb-b2a8-
005056bb3521"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/portsets/b716b4d2-1ed7-11eb-8b0f-
005056bb3521/interfaces/197ba2b7-1e2b-11eb-b2a8-005056bb3521"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/protocols/san/portsets/b716b4d2-1ed7-11eb-8b0f-
005056bb3521"
  }
}
}
```


Deleting a portset

```
# The API:
DELETE /api/protocols/san/portsets/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/portsets/b716b4d2-
1ed7-11eb-8b0f-005056bb3521' -H 'Accept: application/hal+json'
```

Adding a network interface to a portset

```
# The API:
POST /api/protocols/san/portsets/{uuid}/interfaces

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/portsets/5d7b1dfa-1ed7-
11eb-8b0f-005056bb3521/interfaces' -H 'Accept: application/hal+json' -d '{
"fc": { "name": "lif4" } }'
}
```

Adding multiple network interfaces to a portset in a single call

```
# The API:
POST /api/protocols/san/portsets/{uuid}/interfaces

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/portsets/5d7b1dfa-1ed7-
11eb-8b0f-005056bb3521/interfaces' -H 'Accept: application/hal+json' -d '{
"records": [ { "ip": { "name": "lif1" } },  { "ip": { "name": "lif2" } },
{ "fc": { "name": "lif5" } } ] }'
```

Removing a network interface from a portset

```
# The API:
DELETE /api/protocols/san/portsets/{uuid}/interfaces/f92178e7-1e2a-11eb-
b2a8-005056bb3521

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/portsets/5d7b1dfa-
1ed7-11eb-8b0f-005056bb3521/interfaces/f92178e7-1e2a-11eb-b2a8-
005056bb3521' -H 'Accept: application/hal+json'
```

Retrieve portsets

GET `/protocols/san/portsets`

Introduced In: 9.9

Retrieves portsets.

Related ONTAP commands

- `lun portset show`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
igroups.uuid	string	query	False	Filter by igroups.uuid
igroups.name	string	query	False	Filter by igroups.name • maxLength: 96 • minLength: 1
protocol	string	query	False	Filter by protocol
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
interfaces.ip.name	string	query	False	Filter by interfaces.ip.name
interfaces.ip.ip.address	string	query	False	Filter by interfaces.ip.ip.address
interfaces.ip.uuid	string	query	False	Filter by interfaces.ip.uuid
interfaces.uuid	string	query	False	Filter by interfaces.uuid
interfaces.fc.wwpn	string	query	False	Filter by interfaces.fc.wwpn
interfaces.fc.name	string	query	False	Filter by interfaces.fc.name
interfaces.fc.uuid	string	query	False	Filter by interfaces.fc.uuid

Name	Type	In	Required	Description
name	string	query	False	Filter by name • maxLength: 96 • minLength: 1
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[portset]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "igroups": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "interfaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "fc": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "fc_lif1",
            "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
            "wwpn": "20:00:00:50:56:b4:13:a8"
```

```
            },
            "ip": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "ip": {
                "address": "10.10.10.7"
              },
              "name": "lif1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "name": "portset1",
        "protocol": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interfaces

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
_links	_links	
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

portset

Name	Type	Description
_links	_links	
igroups	array[igroups]	An array initiator groups to which the portset is bound.
interfaces	array[interfaces]	An array of network interfaces that are members of the portset. These are the only network interfaces through which the initiators of a bound igroup can access mapped LUNs. Zero or more network interfaces can be supplied when the portset is created. After creation, network interfaces can be added or removed from the portset using the `/protocols/san/portsets/{portset.uuid}/interfaces` endpoint. See DELETE /protocols/san/portsets/{portset.uuid}/interfaces/{uuid} for more details.
name	string	The name of the portset. Required in POST. The name of a portset cannot be changed after creation.

Name	Type	Description
protocol	string	The protocols supported by the portset. This restricts the type of network interfaces that can be added to the portset. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of a portset cannot be changed after creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier for a portset.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a portset

POST `/protocols/san/portsets`

Introduced In: 9.9

Creates a portset.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the portset.
- `name` - Name of the portset.

Recommended optional properties

- `protocol` - The network protocol of the interfaces in the portset.
- `interfaces` - Network interfaces to include in the portset. This property can be used to create the portset and populate it with network interfaces in a single request.

Default property values

If not specified in POST, the following default property values are assigned.

- `protocol` - *mixed* - Data protocol of the portset's network interfaces.

Related ONTAP commands

- `lun portset create`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
igroups	array[igroups]	An array initiator groups to which the portset is bound.

Name	Type	Description
interfaces	array[interfaces]	An array of network interfaces that are members of the portset. These are the only network interfaces through which the initiators of a bound igroup can access mapped LUNs. Zero or more network interfaces can be supplied when the portset is created. After creation, network interfaces can be added or removed from the portset using the `/protocols/san/portsets/{portset.uuid}/interfaces` endpoint. See DELETE /protocols/san/portsets/{portset.uuid}/interfaces/{uuid} for more details.
name	string	The name of the portset. Required in POST. The name of a portset cannot be changed after creation.
protocol	string	The protocols supported by the portset. This restricts the type of network interfaces that can be added to the portset. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of a portset cannot be changed after creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier for a portset.

Example request

```
{
  "igroups": [
    {
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "interfaces": [
    {
      "fc": {
        "name": "fc_lif1",
        "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "ip": {
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "name": "portset1",
  "protocol": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[portset]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "igroups": [
        {
          "name": "igroup1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "interfaces": [
        {
          "fc": {
            "name": "fc_lif1",
            "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
            "wwpn": "20:00:00:50:56:b4:13:a8"
          },
          "ip": {
            "name": "lif1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "name": "portset1",
      "protocol": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254259	A portset with the same name already exists in the SVM.
2621462	The specified SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5373958	The specified portset name contains invalid characters.
5373982	An invalid WWN was specified. The length is incorrect.
5373983	An invalid WWN was specified. The format is incorrect.
5374905	An invalid interfaces array element was specified.
5374906	A specified network interface was not found.
5374907	The specified network interface UUID and name don't identify the same network interface.
5374914	An attempt was made to add a network interface of an incompatible protocol to a portset.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

igroups

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

fc

An FC interface.

Name	Type	Description
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.

Name	Type	Description
uuid	string	The UUID that uniquely identifies the interface.

interfaces

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

portset

Name	Type	Description
igroups	array[igroups]	An array initiator groups to which the portset is bound.

Name	Type	Description
interfaces	array[interfaces]	An array of network interfaces that are members of the portset. These are the only network interfaces through which the initiators of a bound igroup can access mapped LUNs. Zero or more network interfaces can be supplied when the portset is created. After creation, network interfaces can be added or removed from the portset using the `/protocols/san/portsets/{portset.uuid}/interfaces` endpoint. See DELETE /protocols/san/portsets/{portset.uuid}/interfaces/{uuid} for more details.
name	string	The name of the portset. Required in POST. The name of a portset cannot be changed after creation.
protocol	string	The protocols supported by the portset. This restricts the type of network interfaces that can be added to the portset. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of a portset cannot be changed after creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier for a portset.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve portset network interfaces

GET `/protocols/san/portsets/{portset.uuid}/interfaces`

Introduced In: 9.9

Retrieves interfaces of a portset.

Related ONTAP commands

- `lun portset show`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
portset.uuid	string	path	True	The unique identifier of the portset.
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[portset_interface]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "fc": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "fc_lif1",
        "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "ip": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "portset": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
          },
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374908	The portset specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

portset

The portset in which the network interface is found.

Note that this does not mean that the network interface cannot also be found in other portsets.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the portset.

records

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
_links	_links	
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

portset_interface

Name	Type	Description
_links	_links	
fc	fc	An FC interface.

Name	Type	Description
ip	ip	A network interface. Either UUID or name may be supplied on input.
portset	portset	The portset in which the network interface is found. Note that this does not mean that the network interface cannot also be found in other portsets.
uuid	string	The unique identifier of the network interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add portset network interfaces

POST `/protocols/san/portsets/{portset.uuid}/interfaces`

Introduced In: 9.9

Adds one or more interfaces to a portset.

Required properties

- `fc`, `ip` or `records` - Network interface(s) to add to the portset.

Related ONTAP commands

- `lun portset add`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
portset.uuid	string	path	True	The unique identifier of the portset.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
portset	portset	The portset in which the network interface is found. Note that this does not mean that the network interface cannot also be found in other portsets.
records	array[records]	An array of network interfaces specified to add multiple interfaces to a portset in a single API call. Valid in POST only and not allowed when the `fc` or `ip` property is used.
uuid	string	The unique identifier of the network interface.

Example request

```
{
  "fc": {
    "name": "fc_lif1",
    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
    "wwpn": "20:00:00:50:56:b4:13:a8"
  },
  "ip": {
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "portset": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "records": [
    {
      "fc": {
        "name": "fc_lif1",
        "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "ip": {
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[portset_interface]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "fc": {
        "name": "fc_lif1",
        "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "ip": {
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "portset": {
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "records": [
        {
          "fc": {
            "name": "fc_lif1",
            "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
            "wwpn": "20:00:00:50:56:b4:13:a8"
          },
          "ip": {
            "name": "lif1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374906	A specified network interface was not found.
5374907	The specified network interface UUID and name don't identify the same network interface.
5374909	An invalid combination of network interface properties was specified.
5374910	An incomplete set of network interface properties was specified.
5374914	An attempt was made to add a network interface of an incompatible protocol to a portset.
5374915	An attempt was made to add a duplicate network interface to a portset.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

fc

An FC interface.

Name	Type	Description
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

portset

The portset in which the network interface is found.

Note that this does not mean that the network interface cannot also be found in other portsets.

Name	Type	Description
uuid	string	The unique identifier of the portset.

records

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

portset_interface

Name	Type	Description
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
portset	portset	The portset in which the network interface is found. Note that this does not mean that the network interface cannot also be found in other portsets.
records	array[records]	An array of network interfaces specified to add multiple interfaces to a portset in a single API call. Valid in POST only and not allowed when the `fc` or `ip` property is used.
uuid	string	The unique identifier of the network interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete portset network interfaces

DELETE `/protocols/san/portsets/{portset.uuid}/interfaces/{uuid}`

Introduced In: 9.9

Deletes a network interface from a portset.

Related ONTAP commands

- `lun portset remove`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
portset.uuid	string	path	True	The unique identifier of the portset.
uuid	string	path	True	The unique identifier of the network interface in the portset.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374906	A specified network interface was not found.
5374908	The portset specified in the URI does not exist.
5374916	The specified network interface is not in the portset.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve specific portset network interfaces

GET `/protocols/san/portsets/{portset.uuid}/interfaces/{uuid}`

Introduced In: 9.9

Retrieves a network interface of a portset.

Related ONTAP commands

- `lun portset show`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
portset.uuid	string	path	True	The unique identifier of the portset.

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the network interface in the portset.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
portset	portset	The portset in which the network interface is found. Note that this does not mean that the network interface cannot also be found in other portsets.
uuid	string	The unique identifier of the network interface.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "fc": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "fc_lif1",
    "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
    "wwpn": "20:00:00:50:56:b4:13:a8"
  },
  "ip": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "portset": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The interface is not a member of the portset.
5374908	The portset specified in the URI does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information

Name	Type	Description
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

portset

The portset in which the network interface is found.

Note that this does not mean that the network interface cannot also be found in other portsets.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the portset.

records

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
_links	_links	
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a portset

DELETE `/protocols/san/portsets/{uuid}`

Introduced In: 9.9

Deletes a portset.

Related ONTAP commands

- `lun portset delete`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the portset.
allow_delete_while_bound	boolean	query	False	Allows deletion of a portset that is bound to an igroup. Deleting a portset can expand the set of LIFs through which a LUN is available. • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374063	An attempt was made to delete a portset that is bound to an initiator group without using query parameter `allow_delete_while_bound`.
5374908	The portset does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a portset

GET `/protocols/san/portsets/{uuid}`

Introduced In: 9.9

Retrieves a portset.

Related ONTAP commands

- `lun portset show`

Learn more

- DOC /protocols/san/portsets

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the portset.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
igroups	array[igroups]	An array initiator groups to which the portset is bound.
interfaces	array[interfaces]	An array of network interfaces that are members of the portset. These are the only network interfaces through which the initiators of a bound igroup can access mapped LUNs. Zero or more network interfaces can be supplied when the portset is created. After creation, network interfaces can be added or removed from the portset using the `/protocols/san/portsets/{portset.uuid}/interfaces` endpoint. See DELETE /protocols/san/portsets/{portset.uuid}/interfaces/{uuid} for more details.
name	string	The name of the portset. Required in POST. The name of a portset cannot be changed after creation.
protocol	string	The protocols supported by the portset. This restricts the type of network interfaces that can be added to the portset. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of a portset cannot be changed after creation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier for a portset.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "igroups": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "igroup1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "fc": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "fc_lif1",
        "uuid": "3a09ab42-4da1-32cf-9d35-3385a6101a0b",
        "wwpn": "20:00:00:50:56:b4:13:a8"
      },
      "ip": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
```

```
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "name": "portset1",
    "protocol": "string",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The portset does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	_links	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

fc

An FC interface.

Name	Type	Description
_links	_links	
name	string	The name of the FC interface.
uuid	string	The unique identifier of the FC interface.
wwpn	string	The WWPN of the FC interface.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

ip

A network interface. Either UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

interfaces

A container for either a Fibre Channel network interface or an IP network interface. On POST `fc` and `ip` are mutually exclusive.

Name	Type	Description
_links	_links	
fc	fc	An FC interface.
ip	ip	A network interface. Either UUID or name may be supplied on input.
uuid	string	The unique identifier of the network interface.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SAN vVol bindings

Protocols SAN vvol-bindings endpoint overview

Overview

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

Class `protocol_endpoint` and `vvol` LUNs support many-to-many vVol bindings. A LUN of one class can be bound to zero or more LUNs of the opposite class.

The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

The vVol binding REST API allows you to create, delete, and discover vVol bindings.

Examples

Creating a vVol binding

```
# The API:
POST /api/protocols/san/vvol-bindings

# The call:
curl -X POST 'https://<mgmt-ip>/api/protocols/san/vvol-bindings' -H
'Accept: application/hal+json' -d '{ "svm": { "name": "svm1" },
"protocol_endpoint": { "name": "/vol/vol1/pe1" }, "vvol" : { "name":
"/vol/vol1/vvol1" } }'
```

Retrieving all vVol bindings

```
# The API:
GET /api/protocols/san/vvol-bindings

# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/vvol-bindings' -H
'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "protocol_endpoint": {
      "uuid": "2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4",
      "name": "/vol/vol1/pe1",
      "_links": {
        "self": {
          "href": "/api/storage/luns/2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4"
        }
      }
    },
    "vvol": {
      "uuid": "28c02623-42fa-4f5f-a984-a02044bfc005",
      "name": "/vol/vol1/vvol1",
      "_links": {
        "self": {
          "href": "/api/storage/luns/28c02623-42fa-4f5f-a984-a02044bfc005"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/vvol-bindings/2aab57f3-dc5d-491e-80d2-
```

```
15c7ed5dd5c4/28c02623-42fa-4f5f-a984-a02044bfc005"
      }
    }
  },
  {
    "protocol_endpoint": {
      "uuid": "2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4",
      "name": "/vol/vol1/pe1",
      "_links": {
        "self": {
          "href": "/api/storage/luns/2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4"
        }
      }
    },
    "vvol": {
      "uuid": "a8d4ba93-918f-40ad-a1e4-4d7b244bdcdf",
      "name": "/vol/vol1/vvol2",
      "_links": {
        "self": {
          "href": "/api/storage/luns/a8d4ba93-918f-40ad-a1e4-4d7b244bdcdf"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/vvol-bindings/2aab57f3-dc5d-491e-80d2-
15c7ed5dd5c4/a8d4ba93-918f-40ad-a1e4-4d7b244bdcdf"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/protocols/san/vvol-bindings"
  }
}
}
```


Retrieving a specific vVol binding

```
# The API:
GET /api/protocols/san/vvol-bindings/{protocol_endpoint.uuid}/{vvol.uuid}
```

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/protocols/san/vvol-bindings/2aab57f3-
dc5d-491e-80d2-15c7ed5dd5c4/28c02623-42fa-4f5f-a984-a02044bfc005' -H
'Accept: application/hal+json'

# The response:
{
"protocol_endpoint": {
  "uuid": "2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4",
  "name": "/vol/vol1/pe1",
  "_links": {
    "self": {
      "href": "/api/storage/luns/2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4"
    }
  }
},
"vvol": {
  "uuid": "28c02623-42fa-4f5f-a984-a02044bfc005",
  "name": "/vol/vol1/vvol1",
  "_links": {
    "self": {
      "href": "/api/storage/luns/28c02623-42fa-4f5f-a984-a02044bfc005"
    }
  }
},
"svm": {
  "uuid": "bf295ccc-a6bb-11eb-93e8-005056bb470f",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/bf295ccc-a6bb-11eb-93e8-005056bb470f"
    }
  }
},
"id": 2411392,
"is_optimal": true,
"count": 1,
"_links": {
  "self": {
    "href": "/api/protocols/san/vvol-bindings/2aab57f3-dc5d-491e-80d2-
15c7ed5dd5c4/28c02623-42fa-4f5f-a984-a02044bfc005"
  }
}
}
```

Deleting a vVol binding

```
# The API:
DELETE /api/protocols/san/vvol-
bindings/{protocol_endpoint.uuid}/{vvol.uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/protocols/san/vvol-
bindings/2aab57f3-dc5d-491e-80d2-15c7ed5dd5c4/28c02623-42fa-4f5f-a984-
a02044bfc005' -H 'Accept: application/hal+json'
```

Retrieve vVol bindings

GET `/protocols/san/vvol-bindings`

Introduced In: 9.10

Retrieves vVol bindings.

Related ONTAP commands

- `lun bind show`
- DOC /protocols/san/vvol-bindings

Parameters

Name	Type	In	Required	Description
count	integer	query	False	Filter by count
is_optimal	boolean	query	False	Filter by is_optimal
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
secondary_id	string	query	False	Filter by secondary_id • Introduced in: 9.13
protocol_endpoint.name	string	query	False	Filter by protocol_endpoint.name

Name	Type	In	Required	Description
protocol_endpoint.uuid	string	query	False	Filter by protocol_endpoint.uuid
id	integer	query	False	Filter by id
vvol.name	string	query	False	Filter by vvol.name
vvol.uuid	string	query	False	Filter by vvol.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[vvol_binding]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "count": 1,
      "id": 1,
      "is_optimal": 1,
      "protocol_endpoint": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "secondary_id": "0000D20000010000h",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "vvol": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
          },
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

protocol_endpoint

The class `protocol_endpoint` LUN in the vVol binding. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

The SVM in which the vVol binding and its LUNs are located. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vvol

The class `vvol` LUN in the vVol binding. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

vvol_binding

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

Class `protocol_endpoint` and `vvol` LUNs support many-to-many vVol bindings. A LUN of one class can be bound to zero or more LUNs of the opposite class.

The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

Name	Type	Description
_links	_links	

Name	Type	Description
count	integer	The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
is_optimal	boolean	Indicates if the class `protocol_endpoint` LUN and the class `vvol` LUN are on the same cluster node.
protocol_endpoint	protocol_endpoint	The class `protocol_endpoint` LUN in the vVol binding. Required in POST.

Name	Type	Description
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".
svm	svm	The SVM in which the vVol binding and its LUNs are located. Required in POST.
vvol	vvol	The class `vvol` LUN in the vVol binding. Required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a vVol binding

POST `/protocols/san/vvol-bindings`

Introduced In: 9.10

Creates a vVol binding. The binding between any two specific LUNs is reference counted. When a binding is created that already exists, the binding count is incremented.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the vVol binding.
- `protocol_endpoint.uuid` or `protocol_endpoint.name` - Existing class `protocol_endpoint` LUN to bind to the specified class `vvol` LUN.
- `vvol.uuid` or `vvol.name` - Existing class `vvol` LUN to bind to the specified class `protocol_endpoint` LUN.

Related ONTAP commands

- `lun bind create`

Learn more

- DOC /protocols/san/vvol-bindings

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
count	integer	The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
is_optimal	boolean	Indicates if the class `protocol_endpoint` LUN and the class `vvol` LUN are on the same cluster node.
protocol_endpoint	protocol_endpoint	The class `protocol_endpoint` LUN in the vVol binding. Required in POST.
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".
svm	svm	The SVM in which the vVol binding and its LUNs are located. Required in POST.
vvol	vvol	The class `vvol` LUN in the vVol binding. Required in POST.

Example request

```
{
  "count": 1,
  "id": 1,
  "is_optimal": 1,
  "protocol_endpoint": {
    "name": "/vol/volume1/lun1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "secondary_id": "0000D20000010000h",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "vvol": {
    "name": "/vol/volume1/lun1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	The number of records in the response.
records	array[vvol_binding]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "count": 1,
      "id": 1,
      "is_optimal": 1,
      "protocol_endpoint": {
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "secondary_id": "0000D20000010000h",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "vvol": {
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621462	The specified SVM does not exist or is not accessible to the caller.
2621706	Both the SVM UUID and SVM name were supplied, but don't refer to the same SVM.

Error Code	Description
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5374238	A LUN in a snapshot was specified.
5374323	The LUN specified as the protocol endpoint LUN is not of class `protocol_endpoint`.
5374325	The LUN specified as the vVol LUN is not of class `vvol`.
5374874	The UUID and name supplied for the protocol endpoint of Vvol LUN do not refer to the same LUN. Use to the `target` property of the error object to differentiate between the protocol endpoint LUN and the vVol LUN.
5374875	The protocol endpoint or vVol LUN was not found or is not accessible to the caller. Use to the `target` property of the error object to differentiate between the protocol endpoint LUN and the vVol LUN.
5374876	The protocol endpoint or vVol LUN was not found in the SVM. Use to the `target` property of the error object to differentiate between the protocol endpoint LUN and the vVol LUN.
5374924	No protocol endpoint LUN was supplied.
5374925	No vVol LUN was supplied.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

protocol_endpoint

The class `protocol_endpoint` LUN in the vVol binding. Required in POST.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

The SVM in which the vVol binding and its LUNs are located. Required in POST.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vvol

The class `vvol` LUN in the vVol binding. Required in POST.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

vvol_binding

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

Class `protocol_endpoint` and `vvol` LUNs support many-to-many vVol bindings. A LUN of one class can be bound to zero or more LUNs of the opposite class.

The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

Name	Type	Description
count	integer	The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
is_optimal	boolean	Indicates if the class `protocol_endpoint` LUN and the class `vvol` LUN are on the same cluster node.
protocol_endpoint	protocol_endpoint	The class `protocol_endpoint` LUN in the vVol binding. Required in POST.
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".
svm	svm	The SVM in which the vVol binding and its LUNs are located. Required in POST.
vvol	vvol	The class `vvol` LUN in the vVol binding. Required in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a vVol binding

DELETE `/protocols/san/vvol-bindings/{protocol_endpoint.uuid}/{vvol.uuid}`

Introduced In: 9.10

Deletes a vVol binding. The binding between any two specific LUNs is reference counted. When a binding is deleted, the binding count is decremented, but the LUNs remain bound if the resultant reference count is greater than zero. When the binding count reaches zero, the binding is destroyed.

Related ONTAP commands

- `lun bind destroy`

Learn more

- DOC /protocols/san/vvol-bindings

Parameters

Name	Type	In	Required	Description
protocol_endpoint.uuid	string	path	True	The unique identifier of the class `protocol_endpoint` LUN.

Name	Type	In	Required	Description
vvol.uuid	string	path	True	The unique identifier of the class `vvol` LUN.
delete_all_references	boolean	query	False	Forces deletion of the binding regardless of the reference count value. • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The vVol binding was not found because the protocol endpoint or vVol LUN was not found. Use to the `target` property of the error object to differentiate between the protocol endpoint LUN and the vVol LUN.
5374926	The vVol binding was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a vVol binding

GET `/protocols/san/vvol-bindings/{protocol_endpoint.uuid}/{vvol.uuid}`

Introduced In: 9.10

Retrieves a vVol binding.

Related ONTAP commands

- `lun bind show`

Learn more

- DOC /protocols/san/vvol-bindings

Parameters

Name	Type	In	Required	Description
protocol_endpoint.uuid	string	path	True	The unique identifier of the class `protocol_endpoint` LUN.
vvol.uuid	string	path	True	The unique identifier of the class `vvol` LUN.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
count	integer	The vVol binding between any two specific LUNs is reference counted. When a REST POST is executed for a vVol binding that already exists, the vVol binding reference count is incremented. When a REST DELETE is executed, the vVol binding reference count is decremented. Only when the vVol binding count reaches zero, or the query parameter `delete_all_references` is supplied, is the vVol binding destroyed.

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
is_optimal	boolean	Indicates if the class `protocol_endpoint` LUN and the class `vvol` LUN are on the same cluster node.
protocol_endpoint	protocol_endpoint	The class `protocol_endpoint` LUN in the vVol binding. Required in POST.
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".
svm	svm	The SVM in which the vVol binding and its LUNs are located. Required in POST.
vvol	vvol	The class `vvol` LUN in the vVol binding. Required in POST.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "count": 1,
  "id": 1,
  "is_optimal": 1,
  "protocol_endpoint": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "/vol/volume1/lun1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "secondary_id": "0000D20000010000h",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "vvol": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "/vol/volume1/lun1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4	The vVol binding was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

protocol_endpoint

The class `protocol_endpoint` LUN in the vVol binding. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

The SVM in which the vVol binding and its LUNs are located. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

vvol

The class `vvol` LUN in the vVol binding. Required in POST.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage LUNs

Storage luns endpoint overview

Overview

A LUN is the logical representation of storage in a storage area network (SAN).

The LUN REST API allows you to create, update, delete, and discover LUNs.

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

Performance monitoring

Performance of a LUN can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the space utilization and performance of a LUN in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

Creating a LUN

This example creates a 300 gigabyte, thin-provisioned LUN in SVM *svm1*, volume *vol1*, configured for use by *linux* initiators. The `return_records` query parameter is used to retrieve properties of the newly created LUN in the POST response.

```
# The API:
POST /api/storage/luns

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/luns?return_records=true' -H
'Accept: application/hal+json' -d '{ "svm": { "name": "svm1" }, "os_type":
"linux", "space": { "size": "300G" }, "name" : "/vol/vol1/lun1" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "5a24ae5b-28af-47fb-b129-5adf6cfba0a6",
    "svm": {
      "uuid": "6bf967fd-2a1c-11e9-b682-005056bbc17d",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/6bf967fd-2a1c-11e9-b682-005056bbc17d"
        }
```

```
      }
    },
    "name": "/vol/vol1/lun1",
    "location": {
      "logical_unit": "lun1",
      "volume": {
        "uuid": "71cd0dba-2a1c-11e9-b682-005056bbc17d",
        "name": "vol1",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/71cd0dba-2a1c-11e9-b682-
005056bbc17d"
          }
        }
      }
    },
    "class": "regular",
    "enabled": true,
    "os_type": "linux",
    "serial_number": "wf0Iq+N4uck3",
    "space": {
      "guarantee": {
        "requested": false,
        "reserved": false
      },
      "scsi_thin_provisioning_support_enabled": true,
      "size": 322163441664,
      "used": 0
    },
    "status": {
      "container_state": "online",
      "read_only": false,
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/luns/5a24ae5b-28af-47fb-b129-5adf6cfba0a6"
      }
    }
  }
]
}
```


Updating a LUN

This example sets the `comment` property of a LUN.

```
# The API:
PATCH /api/storage/luns/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/luns/5a24ae5b-28af-47fb-b129-
5adf6cfba0a6' -H 'Accept: application/hal+json' -d '{ "comment": "Data for
the finance department." }'
```

Retrieving LUNs

This example retrieves summary information for all online LUNs in SVM *svm1*. The `svm.name` and `status.state` query parameters are used to find the desired LUNs.

```
# The API:
GET /api/storage/luns

# The call:
curl -X GET 'https://<mgmt-
ip>/api/storage/luns?svm.name=svm1&status.state=online' -H 'Accept:
application/hal+json'

# The response:
{
"records": [
  {
    "uuid": "5a24ae5b-28af-47fb-b129-5adf6cfba0a6",
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol1/lun1",
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/luns/5a24ae5b-28af-47fb-b129-5adf6cfba0a6"
      }
    }
  },
  {
    "uuid": "c903a978-9bac-4ce9-8237-4a3ba8b13f08",
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol1/lun2",
```

```
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/luns/c903a978-9bac-4ce9-8237-4a3ba8b13f08"
      }
    }
  },
  {
    "uuid": "7faf0a9e-0a47-4876-8318-3638d5da16bf",
    "svm": {
      "name": "svm1"
    },
    "name": "/vol/vol2/lun3",
    "status": {
      "state": "online"
    },
    "_links": {
      "self": {
        "href": "/api/storage/luns/7faf0a9e-0a47-4876-8318-3638d5da16bf"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/luns?svm.name=svm1&status.state=online"
  }
}
}
```


Retrieving details for a specific LUN

In this example, the `fields` query parameter is used to request all fields, including advanced fields, that would not otherwise be returned by default for the LUN.

```
# The API:
GET /api/storage/luns/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/luns/5a24ae5b-28af-47fb-b129-
5adf6cfba0a6?fields=**' -H 'Accept: application/hal+json'

# The response:
```

```
{
"uuid": "5a24ae5b-28af-47fb-b129-5adf6cfba0a6",
"svm": {
  "uuid": "6bf967fd-2a1c-11e9-b682-005056bbc17d",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/6bf967fd-2a1c-11e9-b682-005056bbc17d"
    }
  }
},
"name": "/vol/vol1/lun1",
"location": {
  "logical_unit": "lun1",
  "volume": {
    "uuid": "71cd0dba-2a1c-11e9-b682-005056bbc17d",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/71cd0dba-2a1c-11e9-b682-
005056bbc17d"
      }
    }
  }
},
"auto_delete": false,
"class": "vvol",
"comment": "Data for the finance department.",
"enabled": true,
"lun_maps": [
  {
    "logical_unit_number": 0,
    "igroup": {
      "uuid": "2b9d57e1-2a66-11e9-b682-005056bbc17d",
      "name": "ig1",
      "_links": {
        "self": {
          "href": "/api/protocols/san/igroups/2b9d57e1-2a66-11e9-b682-
005056bbc17d"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/protocols/san/lun-maps/5a24ae5b-28af-47fb-b129-
5adf6cfba0a6/2b9d57e1-2a66-11e9-b682-005056bbc17d"
```

```
      }
    }
  }
],
"os_type": "linux",
"serial_number": "wf0Iq+N4uck3",
"space": {
  "guarantee": {
    "requested": false,
    "reserved": false
  },
  "scsi_thin_provisioning_support_enabled": true,
  "size": 322163441664,
  "used": 0
},
"vvol": {
  "is_bound": true,
  "bindings": [
    {
      "id": 4304512,
      "partner": {
        "uuid": "353c7262-be4b-4176-acf3-f1021faa8b64",
        "name": "/vol/vol1/pelun1",
        "_links": {
          "self": {
            "href": "/api/storage/luns/353c7262-be4b-4176-acf3-
f1021faa8b64"
          }
        }
      },
      "_links": {
        "self": {
          "href": "/api/protocols/san/vvol-bindings/353c7262-be4b-4176-
acf3-f1021faa8b64/5a24ae5b-28af-47fb-b129-5adf6cfba0a6"
        }
      }
    }
  ]
},
 "metric": {
  "timestamp": "2019-04-09T05:50:15Z",
  "duration": "PT15S",
  "status": "ok",
  "latency": {
    "other": 0,
    "total": 0,
```

```
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  }
},
"status": {
  "container_state": "online",
  "mapped": true,
  "read_only": false,
  "state": "online"
},
"consistency_group": {
  "name": "vol1",
```

```
  "uuid": "6d657aaf-b57a-5396-82ea-c01329e46c79",
  "_links": {
    "self": {
      "href": "/api/application/consistency-groups/6d657aaf-b57a-5396-
82ea-c01329e46c79"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/storage/luns/5a24ae5b-28af-47fb-b129-
5adf6cfba0a6?fields=**"
  }
}
}
```

Deleting a LUN

```
# The API:
DELETE /api/storage/luns/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/storage/luns/c903a978-9bac-4ce9-
8237-4a3ba8b13f08' -H 'Accept: application/hal+json'
```

LUN data

The LUN REST API also supports reading data from and writing data to a LUN via the REST API as multipart/form-data.

Reading data is performed using a GET request on the LUN endpoint. The request header must include `Accept: multipart/form-data`. When this header entry is provided, query parameters `data.offset` and `data.size` are required and used to specify the portion of the LUN's data to read; no other query parameters are allowed. Reads are limited to one megabyte (1MB) per request. Data is returned as `multipart/form-data` content with exactly one form entry containing the data. The form entry has content type `application/octet-stream`.

Writing data is performed using a PATCH request on the LUN endpoint. The request header must include `Content-Type: multipart/form-data`. When this header entry is provided, query parameter `data.offset` is required and used to specify the location within the LUN at which to write the data; no other query parameters are allowed. The request body must be `multipart/form-data` content with exactly one form entry containing the data to write. The content type entry of the form data is ignored and always treated as `application/octet-stream`. Writes are limited to one megabyte (1MB) per request.

Reading data from a LUN

```
# The API:
GET /api/storage/luns/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/luns/c903a978-9bac-4ce9-8237-
4a3ba8b13f08?data.offset=0&data.size=9' -H 'Accept: multipart/form-data'

# In the response header:
Content-Type: multipart/form-data; boundary="c6e9cf51ab354af0"

# The response body:
--c6e9cf51ab354af0
Content-Disposition: form-data;
Content-Type: application/octet-stream
data here
--c6e9cf51ab354af0--
```

Writing data to a LUN

This example writes the contents of a file to a LUN starting at offset 1024.

```
# The API:
PATCH /api/storage/luns/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/luns/c903a978-9bac-4ce9-8237-
4a3ba8b13f08?data.offset=1024' -F "data=@file;type=application/octet-
stream"
```

Cloning LUNs

A clone of a LUN is an independent "copy" of the LUN that shares unchanged data blocks with the original. As blocks of the source and clone are modified, unique blocks are written for each. LUN clones can be created quickly and consume very little space initially. They can be created for the purpose of back-up, or to replicate data for multiple consumers.

Space reservations can be set for the LUN clone independent of the source LUN by setting the `space.guarantee.requested` property in a POST or PATCH request.

A LUN clone can be set to auto-delete by setting the `auto_delete` property. If the LUN's volume is configured for automatic deletion, LUNs that have auto-delete enabled are deleted when a volume is nearly full to reclaim a target amount of free space in the volume.

The value of property `space.scsi_thin_provisioning_support_enabled` is not propagated to the destination when a LUN is cloned as a new LUN; it is reset to false. The value of this property is maintained from the destination LUN when a LUN is overwritten as a clone.

Creating a new LUN clone

You create a new LUN clone as you create any LUN - a POST request to /storage/luns. Set `clone.source.uuid` or `clone.source.name` to identify the source LUN from which the clone is created. The LUN clone and its source must reside in the same volume.

The source LUN can reside in a snapshot, in which case the `clone.source.name` field must be used to identify it. Add `/.snapshot/<snapshot_name>` to the path after the volume name to identify the snapshot. For example `/vol/vol1/.snapshot/snap1/lun1`.

By default, new LUN clones do not inherit the QoS policy of the source LUN; a QoS policy should be set for the clone by setting the `qos_policy` property.

```
# The API:
POST /api/storage/luns

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/luns' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name":
"/vol/vol1/lun2clone1", "clone": { "source": { "name": "/vol/vol1/lun2" }
}, "qos_policy": { "name": "qos1" } }'
```

Over-writing an existing LUN's data as a clone of another

You can overwrite an existing LUN as a clone of another, using a PATCH request to /storage/luns/{uuid}. Set the `clone.source.uuid` or `clone.source.name` property to identify the source LUN from which the clone data is taken. The LUN clone and its source must reside in the same volume.

When used in a PATCH request, the patched LUN's data is overwritten as a clone of the source. The following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `vvol`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the updated LUN are also preserved.

```
# The API:
PATCH /api/storage/luns/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/luns/5a24ae5b-28af-47fb-b129-
5adf6cfba0a6' -H 'Accept: application/hal+json' -d '{ "clone": { "source":
{ "name": "/vol/vol1/lun2" } } }'
```

Converting an NVMe namespace into a LUN

An existing NVMe namespace can be converted in-place to a LUN with no modification to the data blocks. In other words, there is no additional copy created for the data blocks. There are certain requirements for converting an NVMe namespace to a LUN. For instance, the namespace should not be mapped to an NVMe subsystem. Additionally, the namespace should not have a block size other than 512 bytes.

The conversion process updates the metadata to the NVMe namespace, making it a LUN. The conversion is both time and space efficient. After conversion, the new LUN behaves as a regular LUN and may be mapped to an initiator group.

Convert an NVMe namespace into a LUN

You convert an NVMe namespace into a LUN by calling a POST to /storage/luns. Set `convert.namespace.uuid` or `convert.namespace.name` to identify the source NVMe namespace which is to be converted in-place into a LUN.

```
# The API:
POST /api/storage/luns

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/luns' -H 'Accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "convert": {
"namespace": { "name": "/vol/vol1/namespace1" } } }'
```

Moving LUNs between volumes

You move a LUN between volumes by using a PATCH request to /storage/luns/{uuid}. Set the volume portion of the fully qualified LUN path `name` property, `path.volume.uuid`, or `path.volume.name` property to a different volume than the LUN's current volume. Moving a LUN between volumes is an asynchronous activity. A successful request returns a response of 200 synchronously, which indicates that the movement has been successfully queued. The LUN object can then be further polled with a GET request to `/storage/luns/{uuid}` to monitor the status of the movement.

The `movement` sub-object of the LUN object is populated while a LUN movement is in progress and for two minutes following completion of a movement.

Starting a LUN movement

```
# The API:
PATCH /api/storage/luns/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/luns/7faf0a9e-0a47-4876-8318-
3638d5da16bf' -H 'Accept: application/hal+json' -d '{ "name":
"/vol/vol1/lun3" }'
```

Checking on the status of the LUN movement

```
# The API:
GET /api/storage/luns/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/luns/7faf0a9e-0a47-4876-8318-
3638d5da16bf?fields=movement' -H 'Accept: application/hal+json'

# The response:
{
"uuid": "7faf0a9e-0a47-4876-8318-3638d5da16bf",
"name": "/vol/vol1/lun3",
"movement": {
  "paths": {
    "destination": "/vol/vol1/lun3",
    "source": "/vol/vol2/lun3"
  },
  "progress": {
    "elapsed": 1,
    "percent_complete": 0,
    "state": "preparing",
    "volume_snapshot_blocked": false
  }
},
"_links": {
  "self": {
    "href": "/api/storage/luns/7faf0a9e-0a47-4876-8318-3638d5da16bf"
  }
}
}
```

Retrieve LUNs

GET `/storage/luns`

Introduced In: 9.6

Retrieves LUNs.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `attributes.*`
- `auto_delete`
- `copy.*`
- `lun_maps.*`
- `movement.*`
- `space.physical_used`
- `space.physical_used_by_snapshots`
- `space.efficiency_ratio`
- `statistics.*`
- `vvol.bindings.*`
- `metric.*`

Related ONTAP commands

- `lun bind show`
- `lun copy show`
- `lun mapping show`
- `lun move show`
- `lun show`
- `volume file clone show-autodelete`

Learn more

- DOC /storage/luns

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
status.read_only	boolean	query	False	Filter by status.read_only
status.state	string	query	False	Filter by status.state
status.mapped	boolean	query	False	Filter by status.mapped
status.container_state	string	query	False	Filter by status.container_state

Name	Type	In	Required	Description
auto_delete	boolean	query	False	Filter by auto_delete
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
os_type	string	query	False	Filter by os_type
lun_maps.logical_unit_number	integer	query	False	Filter by lun_maps.logical_unit_number
lun_maps.igroup.uuid	string	query	False	Filter by lun_maps.igroup.uuid
lun_maps.igroup.igroups.name	string	query	False	Filter by lun_maps.igroup.igroups.name • Introduced in: 9.16 • maxLength: 96 • minLength: 1
lun_maps.igroup.igroups.uuid	string	query	False	Filter by lun_maps.igroup.igroups.uuid • Introduced in: 9.16
lun_maps.igroup.protocol	string	query	False	Filter by lun_maps.igroup.protocol • Introduced in: 9.16
lun_maps.igroup.os_type	string	query	False	Filter by lun_maps.igroup.os_type • Introduced in: 9.16

Name	Type	In	Required	Description
lun_maps.igroup.comment	string	query	False	Filter by lun_maps.igroup.comment • Introduced in: 9.16 • maxLength: 254 • minLength: 0
lun_maps.igroup.initiators.name	string	query	False	Filter by lun_maps.igroup.initiators.name • Introduced in: 9.16
lun_maps.igroup.initiators.comment	string	query	False	Filter by lun_maps.igroup.initiators.comment • Introduced in: 9.16 • maxLength: 254 • minLength: 0
lun_maps.igroup.name	string	query	False	Filter by lun_maps.igroup.name
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7

Name	Type	In	Required	Description
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7
metric.throughput.other	integer	query	False	Filter by metric.throughput.other • Introduced in: 9.7

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
create_time	string	query	False	Filter by create_time • Introduced in: 9.7
name	string	query	False	Filter by name
serial_number	string	query	False	Filter by serial_number • maxLength: 12 • minLength: 12
qos_policy.uuid	string	query	False	Filter by qos_policy.uuid
qos_policy.name	string	query	False	Filter by qos_policy.name

Name	Type	In	Required	Description
copy.destinations.peer.uuid	string	query	False	Filter by copy.destinations.peer.uuid • Introduced in: 9.14
copy.destinations.peer.name	string	query	False	Filter by copy.destinations.peer.name • Introduced in: 9.14
copy.destinations.name	string	query	False	Filter by copy.destinations.name • Introduced in: 9.10
copy.destinations.max_throughput	integer	query	False	Filter by copy.destinations.max_throughput • Introduced in: 9.10
copy.destinations.progress.volume_snapshot_blocked	boolean	query	False	Filter by copy.destinations.progress.volume_snapshot_blocked • Introduced in: 9.10
copy.destinations.progress.failure.code	string	query	False	Filter by copy.destinations.progress.failure.code • Introduced in: 9.10

Name	Type	In	Required	Description
copy.destinations.progress.failure.message	string	query	False	Filter by copy.destinations.progress.failure.message • Introduced in: 9.10
copy.destinations.progress.failure.arguments.code	string	query	False	Filter by copy.destinations.progress.failure.arguments.code • Introduced in: 9.10
copy.destinations.progress.failure.arguments.message	string	query	False	Filter by copy.destinations.progress.failure.arguments.message • Introduced in: 9.10
copy.destinations.progress.elapsed	integer	query	False	Filter by copy.destinations.progress.elapsed • Introduced in: 9.10
copy.destinations.progress.state	string	query	False	Filter by copy.destinations.progress.state • Introduced in: 9.10
copy.destinations.progress.percent_complete	integer	query	False	Filter by copy.destinations.progress.percent_complete • Introduced in: 9.10 • Max value: 100 • Min value: 0

Name	Type	In	Required	Description
copy.destinations.uuid	string	query	False	Filter by copy.destinations.uuid • Introduced in: 9.10
copy.source.progress.elapsed	integer	query	False	Filter by copy.source.progress.elapsed • Introduced in: 9.10
copy.source.progress.state	string	query	False	Filter by copy.source.progress.state • Introduced in: 9.10
copy.source.progress.percent_complete	integer	query	False	Filter by copy.source.progress.percent_complete • Introduced in: 9.10 • Max value: 100 • Min value: 0
copy.source.progress.volume_snapshot_blocked	boolean	query	False	Filter by copy.source.progress.volume_snapshot_blocked • Introduced in: 9.10
copy.source.progress.failure.code	string	query	False	Filter by copy.source.progress.failure.code • Introduced in: 9.10

Name	Type	In	Required	Description
copy.source.progress.failure.message	string	query	False	Filter by copy.source.progress.failure.message • Introduced in: 9.10
copy.source.progress.failure.arguments.code	string	query	False	Filter by copy.source.progress.failure.arguments.code • Introduced in: 9.10
copy.source.progress.failure.arguments.message	string	query	False	Filter by copy.source.progress.failure.arguments.message • Introduced in: 9.10
copy.source.max_throughput	integer	query	False	Filter by copy.source.max_throughput • Introduced in: 9.10
copy.source.peer.uuid	string	query	False	Filter by copy.source.peer.uuid • Introduced in: 9.14
copy.source.peer.name	string	query	False	Filter by copy.source.peer.name • Introduced in: 9.14
copy.source.name	string	query	False	Filter by copy.source.name • Introduced in: 9.10

Name	Type	In	Required	Description
copy.source.uuid	string	query	False	Filter by copy.source.uuid • Introduced in: 9.10
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other • Introduced in: 9.7
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
consistency_group.name	string	query	False	Filter by consistency_group.name • Introduced in: 9.10
consistency_group.uuid	string	query	False	Filter by consistency_group.uuid • Introduced in: 9.10
class	string	query	False	Filter by class
movement.paths.destination	string	query	False	Filter by movement.paths.destination
movement.paths.source	string	query	False	Filter by movement.paths.source
movement.progress.volume_snapshot_blocked	boolean	query	False	Filter by movement.progress.volume_snapshot_blocked
movement.progress.failure.code	string	query	False	Filter by movement.progress.failure.code
movement.progress.failure.message	string	query	False	Filter by movement.progress.failure.message
movement.progress.failure.arguments.code	string	query	False	Filter by movement.progress.failure.arguments.code

Name	Type	In	Required	Description
movement.progress.failure.arguments.message	string	query	False	Filter by movement.progress.failure.arguments.message
movement.progress.percent_complete	integer	query	False	Filter by movement.progress.percent_complete • Max value: 100 • Min value: 0
movement.progress.elapsed	integer	query	False	Filter by movement.progress.elapsed
movement.progress.state	string	query	False	Filter by movement.progress.state
movement.max_throughput	integer	query	False	Filter by movement.max_throughput
attributes.value	string	query	False	Filter by attributes.value • Introduced in: 9.10 • maxLength: 4091 • minLength: 1
attributes.name	string	query	False	Filter by attributes.name • Introduced in: 9.10 • maxLength: 4091 • minLength: 1
comment	string	query	False	Filter by comment • maxLength: 254 • minLength: 0

Name	Type	In	Required	Description
serial_number_hex	string	query	False	Filter by serial_number_hex • Introduced in: 9.17
space.physical_used	integer	query	False	Filter by space.physical_used • Introduced in: 9.16
space.used	integer	query	False	Filter by space.used
space.scsi_thin_provisioning_support_enabled	boolean	query	False	Filter by space.scsi_thin_provisioning_support_enabled • Introduced in: 9.10
space.guarantee.requested	boolean	query	False	Filter by space.guarantee.requested
space.guarantee.reserved	boolean	query	False	Filter by space.guarantee.reserved
space.efficiency_ratio	number	query	False	Filter by space.efficiency_ratio • Introduced in: 9.16
space.size	integer	query	False	Filter by space.size • Max value: 140737488355328 • Min value: 4096

Name	Type	In	Required	Description
space.physical_used_by_snapshots	integer	query	False	Filter by space.physical_used_by_snapshots • Introduced in: 9.16
vvol.bindings.secondary_id	string	query	False	Filter by vvol.bindings.secondary_id • Introduced in: 9.13
vvol.bindings.id	integer	query	False	Filter by vvol.bindings.id • Introduced in: 9.10
vvol.bindings.partner.name	string	query	False	Filter by vvol.bindings.partner.name • Introduced in: 9.10
vvol.bindings.partner.uuid	string	query	False	Filter by vvol.bindings.partner.uuid • Introduced in: 9.10
vvol.is_bound	boolean	query	False	Filter by vvol.is_bound • Introduced in: 9.10
location.volume.uuid	string	query	False	Filter by location.volume.uuid
location.volume.name	string	query	False	Filter by location.volume.name

Name	Type	In	Required	Description
location.qtree.id	integer	query	False	Filter by location.qtree.id • Max value: 4994 • Min value: 0
location.qtree.name	string	query	False	Filter by location.qtree.name
location.node.uuid	string	query	False	Filter by location.node.uuid • Introduced in: 9.10
location.node.name	string	query	False	Filter by location.node.name • Introduced in: 9.10
location.logical_unit	string	query	False	Filter by location.logical_unit
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[lun]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "attributes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "name1",
          "value": "value1"
        }
      ],
      "class": "string",
      "comment": "string",
      "consistency_group": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cg1",
        "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
      },
      "copy": {
        "destinations": [
          {
            "_links": {
              "self": {
```

```
                "href": "/api/resourcelink"
              }
            },
            "max_throughput": 0,
            "name": "/vol/vol1/lun1",
            "peer": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "peer1",
              "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
            },
            "progress": {
              "elapsed": 0,
              "failure": {
                "arguments": [
                  {
                    "code": "string",
                    "message": "string"
                  }
                ],
                "code": "4",
                "message": "entry doesn't exist"
              },
              "percent_complete": 0,
              "state": "string"
            },
            "uuid": "1bc327d5-4654-5284-a116-f182282240b4"
          }
        ],
        "source": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/vol2/lun1",
          "peer": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "peer1",
```

```
            "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
          },
          "progress": {
            "elapsed": 0,
            "failure": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
              ],
              "code": "4",
              "message": "entry doesn't exist"
            },
            "percent_complete": 0,
            "state": "string"
          },
          "uuid": "03c05019-40d9-3945-c767-dca4c3be5e90"
        }
      },
      "create_time": "2018-06-04 15:00:00 -0400",
      "location": {
        "logical_unit": "lun1",
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "qtree": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "id": 1,
          "name": "qt1"
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
```

```
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "lun_maps": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "igroup": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "comment": "string",
            "igroups": [
              {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "igroup1",
                "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
              }
            ],
            "initiators": [
              {
                "comment": "my comment",
                "name": "iqn.1998-01.com.corp.iscsi:name1"
              }
            ],
            "name": "igroup1",
            "os_type": "string",
            "protocol": "string",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "metric": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "movement": {
        "paths": {
          "destination": "/vol/vol1/lun1",
          "source": "/vol/vol2/lun2"
        },
        "progress": {
          "elapsed": 0,
          "failure": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          },
          "percent_complete": 0,
          "state": "string"
        }
      },
      "name": "/vol/volume1/qtree1/lun1",
      "os_type": "string",
      "qos_policy": {
```

```
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "qos1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "serial_number": "string",
      "serial_number_hex": "string",
      "space": {
        "efficiency_ratio": 2.5,
        "physical_used": 1073741824,
        "physical_used_by_snapshots": 1073741824,
        "size": 1073741824,
        "used": 0
      },
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "status": {
        "container_state": "string",
        "state": "online"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vvol": {
        "bindings": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "id": 1,
            "partner": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "/vol/vol1/lun1",
              "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
            },
            "secondary_id": "0000D20000010000h"
          }
        ]
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

attributes

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Optional in POST.

Name	Type	Description
_links	_links	
name	string	The attribute name.
value	string	The attribute value.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`,

`qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

consistency_group

The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
_links	_links	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

namespace

The source namespace for convert operation. This can be specified using property `convert.namespace.uuid` or `convert.namespace.name`. If both properties are supplied, they must refer to the same NVMe namespace.

Valid in POST. A convert request from NVMe namespace to LUN cannot be combined with setting any other LUN properties. All other properties of the converted LUN come from the source NVMe namespace.

convert

This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is desired.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

This is only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.

Name	Type	Description
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Error information provided if the asynchronous LUN copy operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
failure	error	Error information provided if the asynchronous LUN copy operation fails.
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy.

Name	Type	Description
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

destinations

A LUN copy operation in which the containing LUN is the source of the copy.

Name	Type	Description
_links	_links	
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. See property `copy.source.max_throughput` for further details.
name	string	The fully qualified path of the LUN copy destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. This is only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy destination.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
failure	error	Error information provided if the asynchronous LUN copy operation fails.
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy. Valid in PATCH when an LUN copy is active. Set to *paused* to pause a LUN copy. Set to *replicating* to resume a paused LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

source

The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy.

Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

Name	Type	Description
_links	_links	
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN copy, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. Valid only in a POST that begins a LUN copy or a PATCH when a LUN copy is already in process. • format: int64 • Introduced in: 9.10 • x-nullable: true
name	string	The fully qualified path of the LUN copy source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN. Set this property in POST to specify the source for a LUN copy operation.

Name	Type	Description
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy source. Set this property in POST to specify the source for a LUN copy operation.

copy

This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties.

Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy.

While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN.

There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
destinations	array[destinations]	An array of destination LUNs of LUN copy operations in which the containing LUN is the source of the copy.
source	source	The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy. Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

node

The cluster node that hosts the LUN.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

qtree

The qtree in which the LUN is optionally located. Valid in POST and PATCH.

If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree.

A PATCH that modifies the qtree of the LUN is considered a rename operation.

Name	Type	Description
_links	_links	
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the LUN is located. Valid in POST and PATCH.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the LUN within the ONTAP cluster.
LUNs support rename and move between volumes. Valid in POST and PATCH.

Name	Type	Description
logical_unit	string	The base name component of the LUN. Valid in POST and PATCH. If properties `name` and `location.logical_unit` are specified in the same request, they must refer to the base name. A PATCH that modifies the base name of the LUN is considered a rename operation.
node	node	The cluster node that hosts the LUN.

Name	Type	Description
qtree	qtree	The qtree in which the LUN is optionally located. Valid in POST and PATCH. If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree. A PATCH that modifies the qtree of the LUN is considered a rename operation.
volume	volume	The volume in which the LUN is located. Valid in POST and PATCH. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

self_link

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	self_link	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group to which the LUN is mapped.

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.

Name	Type	Description
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group to which the LUN is mapped.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

paths

The fully qualified LUN path names involved in the LUN movement.

Name	Type	Description
destination	string	The fully qualified path of the LUN movement destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

Name	Type	Description
source	string	The fully qualified path of the LUN movement source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

error

Error information provided if the asynchronous LUN movement operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN movement.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN movement, in seconds.
failure	error	Error information provided if the asynchronous LUN movement operation fails.
percent_complete	integer	The percentage completed of the LUN movement.
state	string	The state of the LUN movement. Valid in PATCH when an LUN movement is active. Set to *paused* to pause a LUN movement. Set to *replicating* to resume a paused LUN movement.

Name	Type	Description
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN movement. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN movement.

movement

This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume.

Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement.

While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object.

There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN movement. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN movement, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. This property is valid only in a POST that begins a LUN movement or a PATCH when a LUN movement is already in process. • format: int64 • Introduced in: 9.6 • x-nullable: true
paths	paths	The fully qualified LUN path names involved in the LUN movement.
progress	progress	Properties related to the progress of an active or recently completed LUN movement.

qos_policy

The QoS policy for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume. This property is mutually exclusive with the LUN granular `qos_policy`. If no `qos_policy` is provided at LUN or volume granularity, a volume granular policy is set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_service

Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

object_stores

tiering

The tiering placement and policy definitions for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
storage_service	storage_service	Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

qos_policy

The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
_links	_links	
name	string	The name of the QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set this property to an empty string ("") in a PATCH request. Valid in POST and PATCH.
uuid	string	The unique identifier of the QoS policy. Valid in POST and PATCH.

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH. This property is caller settable as described above.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
efficiency_ratio	number	The storage efficiency ratio of the LUN without snapshots. (Logical Used / Used) This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
physical_used	integer	The number of bytes consumed on the disk by the LUN, excluding snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the LUN's snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
scsi_thin_provisioning_support_enabled	boolean	To leverage the benefits of SCSI thin provisioning, it must be supported by your host. SCSI thin provisioning uses the Logical Block Provisioning feature as defined in the SCSI SBC-3 standard. Only hosts that support this standard can use SCSI thin provisioning in ONTAP. When you disable SCSI thin provisioning support in ONTAP, you turn off the following SCSI thin provisioning features: • Unmapping and reporting space usage for space reclamation • Reporting resource exhaustion errors The value of this property is not propagated to the destination when a LUN is cloned as a new LUN or copied; it is reset to false. The value of this property is maintained from the destination LUN when a LUN is overwritten as a clone. Valid in POST and PATCH. • Default value: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not decreased using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

status

Status information about the LUN.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the LUN. LUNs are only available when their containers are available.
mapped	boolean	Reports if the LUN is mapped to one or more initiator groups. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the LUN allows only read access.
state	string	The state of the LUN. Normal states for a LUN are *online* and *offline*. Other states indicate errors.

svm

The SVM in which the LUN is located.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

partner

The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
_links	_links	
name	string	The name of the partner LUN.
uuid	string	The unique identifier of the partner LUN.

bindings

A vVol binding with which the LUN is associated.

Name	Type	Description
_links	_links	

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
partner	partner	The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".

vvol

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings.

There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
bindings	array[bindings]	Bindings between the LUN, which must be of class `protocol_endpoint` or `vvol`, and LUNs of the opposite class. A class `vvol` LUN must be bound to a class `protocol_endpoint` LUN in order to be accessed. Class `protocol_endpoint` and `vvol` LUNs allow many-to-many bindings. A LUN of one class is allowed to be bound to zero or more LUNs of the opposite class. The binding between any two specific LUNs is reference counted. When a binding is created that already exists, the binding count is incremented. When a binding is deleted, the binding count is decremented, but the LUNs remain bound if the resultant reference count is greater than zero. When the binding count reaches zero, the binding is destroyed. The bindings array contains LUNs of the opposite class of the containing LUN object. There is an added computational cost to retrieving property values for `vvol.bindings`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
is_bound	boolean	Reports if the LUN is part of a VMware virtual volume (vVol) bind relationship. This is `true` if the LUN is of class `protocol_endpoint` or `vvol` and has one or more bindings to a LUN of the opposite class. This is false if the LUN is of class `regular` or unbound.

lun

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
_links	_links	

Name	Type	Description
attributes	array[attributes]	An array of name/value pairs optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP. Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes. Valid in POST except when creating a LUN clone. A cloned can already have attributes from its source. You can add, modify, and delete the attributes of a LUN clone in separate requests after creation of the LUN. Attributes can be added/modified/removed for an existing LUN using the /api/storage/luns/{lun.uuid}/attributes endpoint. For further information, see DOC /storage/luns/{lun.uuid}/attributes . There is an added computational cost to retrieving property values for `attributes`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. • Introduced in: 9.10 • readCreate: 1

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
class	string	The class of LUN. Optional in POST.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, check the `status.state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6
lun_maps	array[lun_maps]	The LUN maps with which the LUN is associated. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported for GET only.
metric	metric	Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	status	Status information about the LUN.
svm	svm	The SVM in which the LUN is located.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a LUN

POST `/storage/luns`

Introduced In: 9.6

Creates a LUN.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the LUN.
- `name`, `location.volume.name` or `location.volume.uuid` - Existing volume in which to create the LUN.
- `name` or `location.logical_unit` - Base name of the LUN.
- `os_type` - Operating system from which the LUN will be accessed. Required when creating a non-clone LUN and disallowed when creating a clone of an existing LUN. A clone's `os_type` is taken from the source LUN.
- `space.size` - Size of the LUN. Required when creating a non-clone LUN and disallowed when creating a clone of an existing LUN. A clone's size is taken from the source LUN.

Recommended optional properties

- `qos_policy.name` or `qos_policy.uuid` - Existing traditional or adaptive QoS policy to be applied to the LUN. All LUNs should be managed by a QoS policy at the volume or LUN level.

Default property values

If not specified in POST, the follow default property values are assigned.

- `auto_delete` - *false*

Related ONTAP commands

- `lun create`
- `lun convert-from-namespace`
- `lun copy start`
- `volume file clone autodelete`
- `volume file clone create`

POST is asynchronous when creating a new LUN. It is synchronous when converting a namespace to a LUN via the `convert` property.

Learn more

- DOC /storage/luns

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
attributes	array[attributes]	An array of name/value pairs optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP. Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes. Valid in POST except when creating a LUN clone. A cloned can already have attributes from its source. You can add, modify, and delete the attributes of a LUN clone in separate requests after creation of the LUN. Attributes can be added/modified/removed for an existing LUN using the /api/storage/luns/{lun.uuid}/attributes endpoint. For further information, see DOC /storage/luns/{lun.uuid}/attributes . There is an added computational cost to retrieving property values for `attributes`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. • Introduced in: 9.10 • readCreate: 1

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
class	string	The class of LUN. Optional in POST.

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.
convert	convert	This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is desired.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6
lun_maps	array[lun_maps]	The LUN maps with which the LUN is associated. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported for GET only.

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
status	status	Status information about the LUN.
svm	svm	The SVM in which the LUN is located.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Example request

```
{
  "attributes": [
    {
      "name": "name1",
      "value": "value1"
    }
  ],
  "class": "string",
  "clone": {
    "source": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "comment": "string",
  "consistency_group": {
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "convert": {
    "namespace": {
      "name": "/vol/volume1/namespace1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "copy": {
    "destinations": [
      {
        "max_throughput": 0,
        "name": "/vol/vol1/lun1",
        "peer": {
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "progress": {
          "elapsed": 0,
          "percent_complete": 0,
          "state": "string"
        },
        "uuid": "1bc327d5-4654-5284-a116-f182282240b4"
      }
    ],
    "source": {
      "name": "/vol/vol2/lun1",
```

```
      "peer": {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      },
      "uuid": "03c05019-40d9-3945-c767-dca4c3be5e90"
    }
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "enabled": true,
  "location": {
    "logical_unit": "lun1",
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "qtree": {
      "id": 1,
      "name": "qt1"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "lun_maps": [
    {
      "igroup": {
        "comment": "string",
        "igroups": [
          {
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "initiators": [
          {
            "comment": "my comment",
            "name": "iqn.1998-01.com.corp.iscsi:name1"
          }
        ],
        "name": "igroup1",
        "os_type": "string",
        "protocol": "string",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
```

```
  ],
  "movement": {
    "paths": {
      "destination": "/vol/vol1/lun1",
      "source": "/vol/vol2/lun2"
    }
  },
  "name": "/vol/volume1/qtree1/lun1",
  "os_type": "string",
  "provisioning_options": {
    "qos_policy": {
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "snapshot_policy": {
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "storage_service": {
      "name": "string"
    },
    "tiering": {
      "control": "string",
      "object_stores": [
        {
          "name": "string"
        }
      ],
      "policy": "string"
    }
  },
  "qos_policy": {
    "name": "qos1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "serial_number": "string",
  "serial_number_hex": "string",
  "space": {
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "status": {
    "container_state": "string",
```

```
    "state": "online"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vvol": {
    "bindings": [
      {
        "id": 1,
        "partner": {
          "name": "/vol/vol1/lun1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        },
        "secondary_id": "0000D20000010000h"
      }
    ]
  }
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917927	The specified volume was not found.
918236	The specified `location.volume.uuid` and `location.volume.name` do not refer to the same volume.
1260121	Cloning a LUN to a volume different than the source volume is not supported.
1260136	The specified destination for a clone operation already exists as a LUN, namespace, or file.
2621462	The specified SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5242927	The specified qtree was not found.
5242950	The specified `location.qtree.id` and `location.qtree.name` do not refer to the same qtree.
5374121	A LUN name can only contain characters A-Z, a-z, 0-9, "-", ".", "_", "{" and "}".
5374123	A negative size was provided for the LUN.
5374124	The specified size is too small for the LUN.
5374125	The specified size is too large for the LUN.
5374127	The specified LUN name is invalid.
5374129	LUNs cannot be created on a load sharing mirror volume.
5374130	An invalid size value was provided.
5374237	LUNs cannot be created on an SVM root volume.
5374238	LUNs cannot be created in snapshots.

Error Code	Description
5374241	A size value with invalid units was provided.
5374242	A LUN or NVMe namespace already exists at the specified path.
5374352	An invalid name was provided for the LUN.
5374614	The specified storage availability zone does not exist.
5374707	Creating a LUN in the specific volume is not allowed because the volume is reserved for an application.
5374858	The volume specified by `name` is not the same as that specified by `location.volume`.
5374859	No volume was specified for the LUN.
5374860	The qtree specified by `name` is not the same as that specified by `location.qtree`.
5374861	The LUN base name specified by `name` is not the same as that specified by `location.logical_unit`.
5374862	No LUN path base name was provided for the LUN.
5374863	An error occurred after successfully creating the LUN. Some properties were not set.
5374874	The specified `clone.source.uuid` and `clone.source.name` do not refer to the same LUN.
5374875	The specified `clone.source` was not found.
5374876	The specified `clone.source` was not found.
5374883	The property cannot be specified when creating a LUN clone. The `target` property of the error object identifies the property.
5374884	A property that is required when creating a new LUN that is not a LUN clone or LUN copy was not supplied. The `target` property of the error object identifies the property.
5374886	An error occurred after successfully creating the LUN preventing the retrieval of its properties.
5374899	The `clone.source.uuid` property is not supported when specifying a source LUN from a snapshot.
5374928	An incomplete attribute name/value pair was supplied.
5374929	The combined sizes of an attribute name and value are too large.
5374932	A name for an attribute was duplicated.

Error Code	Description
5374942	The property cannot be specified at the same time when creating a LUN as a clone. The `target` property of the error object identifies the other property given with clone.
5374943	The property cannot be specified at the same time when creating a LUN as a copy. The `target` property of the error object identifies the other property given with copy.
5374944	The property cannot be specified when converting an NVMe namespace into a LUN. The `target` property of the error object identifies the property.
5375054	The source LUN is required when requesting an SVM copy operation.
5375059	An unsuitable QoS policy was specified.
5375061	The specified `location.storage_availability_zone.uuid` and `location.storage_availability_zone.name` do not refer to the same storage availability zone.
5376461	The specified LUN name is invalid.
5376462	The specified LUN name is too long.
5376463	The snapshot portion of the specified LUN name is too long.
5376469	The property cannot be set during the LUN create operation on this platform.
5376515	The specified storage availability zone is not configured for provisioning on the specified SVM.
5440509	No suitable storage can be found for the specified requirements.
5440688	A LUN cannot be created with the same name as an existing LUN.
5702832	A LUN or namespace with the same name is already being created. LUN and namespace names must be unique within an SVM.
7018877	Maximum combined total (50) of file and LUN copy and move operations reached. When one or more of the operations has completed, try the command again.
13565952	The LUN clone request failed.
26345672	An SVM peer relationship was not found with the provided 'copy.source.peer.uuid'.

Error Code	Description
26345673	An SVM peer relationship between the SVM provided in 'copy.source.peer.name' and the SVM provided in either 'svm.name' or 'svm.uuid' was not found.
26345674	The SVM peer relationship provided in 'copy.source.peer.uuid' does not match a peer relationship between the local SVM provided in either 'svm.uuid' or 'svm.name' and the peer SVM provided in 'copy.source.peer.name'.
26345675	The destination SVM provided via 'svm.name' or 'svm.uuid' does not match the local SVM for the provided SVM peer relationship UUID in 'copy.source.peer.uuid'.
72089755	NVMe namespace with a block size of 4096 bytes cannot be converted to a LUN.
72089756	Namespace is currently mapped to subsystem.
72089757	NVMe namespace in a snapshot cannot be converted to a LUN.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

attributes

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Optional in POST.

Name	Type	Description
name	string	The attribute name.
value	string	The attribute value.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.

Name	Type	Description
uuid	string	The unique identifier of the clone source LUN. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

Name	Type	Description
source	source	The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN. Valid in POST to create a new LUN as a clone of the source. Valid in PATCH to overwrite an existing LUN's data as a clone of another.

consistency_group

The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

namespace

The source namespace for convert operation. This can be specified using property `convert.namespace.uuid` or `convert.namespace.name`. If both properties are supplied, they must refer to the same NVMe namespace.

Valid in POST. A convert request from NVMe namespace to LUN cannot be combined with setting any other LUN properties. All other properties of the converted LUN come from the source NVMe namespace.

Name	Type	Description
name	string	The name of the source NVMe namespace. Valid in POST. An NVMe namespace is located within a volume. Optionally, it can be located within a qtree in a volume. NVMe namespace names are paths of the form "/vol/<volume>[/<qtree>]/<NVMe namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the source NVMe namespace. Valid in POST.

convert

This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is desired.

Name	Type	Description
namespace	namespace	The source namespace for convert operation. This can be specified using property `convert.namespace.uuid` or `convert.namespace.name`. If both properties are supplied, they must refer to the same NVMe namespace. Valid in POST. A convert request from NVMe namespace to LUN cannot be combined with setting any other LUN properties. All other properties of the converted LUN come from the source NVMe namespace.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

This is only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Error information provided if the asynchronous LUN copy operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.

Name	Type	Description
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

destinations

A LUN copy operation in which the containing LUN is the source of the copy.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. See property `copy.source.max_throughput` for further details.
name	string	The fully qualified path of the LUN copy destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. This is only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy destination.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
percent_complete	integer	The percentage completed of the LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

source

The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy.

Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN copy, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. Valid only in a POST that begins a LUN copy or a PATCH when a LUN copy is already in process. • format: int64 • Introduced in: 9.10 • x-nullable: true
name	string	The fully qualified path of the LUN copy source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN. Set this property in POST to specify the source for a LUN copy operation.

Name	Type	Description
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.
uuid	string	The unique identifier of the LUN copy source. Set this property in POST to specify the source for a LUN copy operation.

copy

This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties.

Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy.

While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN.

There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
destinations	array[destinations]	An array of destination LUNs of LUN copy operations in which the containing LUN is the source of the copy.

Name	Type	Description
source	source	The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy. Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

node

The cluster node that hosts the LUN.

Name	Type	Description
name	string	
uuid	string	

qtree

The qtree in which the LUN is optionally located. Valid in POST and PATCH.

If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree.

A PATCH that modifies the qtree of the LUN is considered a rename operation.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the LUN is located. Valid in POST and PATCH.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the LUN within the ONTAP cluster.
LUNs support rename and move between volumes. Valid in POST and PATCH.

Name	Type	Description
logical_unit	string	The base name component of the LUN. Valid in POST and PATCH. If properties `name` and `location.logical_unit` are specified in the same request, they must refer to the base name. A PATCH that modifies the base name of the LUN is considered a rename operation.
node	node	The cluster node that hosts the LUN.

Name	Type	Description
qtree	qtree	The qtree in which the LUN is optionally located. Valid in POST and PATCH. If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree. A PATCH that modifies the qtree of the LUN is considered a rename operation.
volume	volume	The volume in which the LUN is located. Valid in POST and PATCH. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

self_link

igroups

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group to which the LUN is mapped.

Name	Type	Description
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.

Name	Type	Description
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
igroup	igroup	The initiator group to which the LUN is mapped.

Name	Type	Description
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

paths

The fully qualified LUN path names involved in the LUN movement.

Name	Type	Description
destination	string	The fully qualified path of the LUN movement destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
source	string	The fully qualified path of the LUN movement source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

error

Error information provided if the asynchronous LUN movement operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN movement.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN movement, in seconds.
percent_complete	integer	The percentage completed of the LUN movement.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN movement. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN movement.

movement

This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume.

Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement.

While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object.

There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN movement. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN movement, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. This property is valid only in a POST that begins a LUN movement or a PATCH when a LUN movement is already in process. • format: int64 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
paths	paths	The fully qualified LUN path names involved in the LUN movement.

qos_policy

The QoS policy for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume. This property is mutually exclusive with the LUN granular `qos_policy`. If no `qos_policy` is provided at LUN or volume granularity, a volume granular policy is set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage_service

Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

Name	Type	Description
name	string	Storage service name. If not specified, the default value is the most performant for the platform.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
auto	boolean	If the volume specified in the request does not exist, automatically provision one of appropriate size. If the volume does exist, resize it to accommodate the new LUN. This property is only supported on Unified ONTAP. The following behavior is different from a traditional POST request: • The operation is asynchronous. • The `qos_policy` property is applied to the provisioned volume instead of the LUN. A default QoS policy is applied to the volume if one is not provided. • The `provisioning_options.count` property is supported, provisioning *count* LUNs on the volume using the specified properties. • The `lun_maps` property is supported. If the specified initiator group does not exist, it is created. The LUN is mapped to this initiator group. If an initiator group is provisioned in this way, it is deleted after it is no longer mapped to any LUNs. • The `clone`, `copy`, and `convert` properties are not supported. • When performing `records` based operations, specifying this property in the query applies to the entire operation. Specifying it for an individual record within the request applies to only that record. • Many other `provisioning_options` properties are supported to control the placement of the LUN and the properties of the volume containing the LUN.

Name	Type	Description
count	integer	The number of LUNs to provision with these properties. Only POST requests based on `space.size` are supported. When provided, the name is considered a prefix, and a suffix of the form _<*N*> is generated where N is the next available numeric index, starting with 1.
qos_policy	qos_policy	The QoS policy for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume. This property is mutually exclusive with the LUN granular `qos_policy`. If no `qos_policy` is provided at LUN or volume granularity, a volume granular policy is set based on the `storage_service.name`, which defaults to the most performant service available.
snapshot_policy	snapshot_policy_reference	This is a reference to the snapshot policy.
storage_service	storage_service	Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.
tiering	tiering	The tiering placement and policy definitions for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume.

Name	Type	Description
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning the volume to host the LUN. Only mirrored aggregates are used if this parameter is set to *true* and only unmirrored aggregates are used if this parameter is set to *false*. The default value is *true* for a MetroCluster configuration and is *false* for a non-MetroCluster configuration.

qos_policy

The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
name	string	The name of the QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set this property to an empty string ("") in a PATCH request. Valid in POST and PATCH.
uuid	string	The unique identifier of the QoS policy. Valid in POST and PATCH.

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH. This property is caller settable as described above.
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
efficiency_ratio	number	The storage efficiency ratio of the LUN without snapshots. (Logical Used / Used) This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.

Name	Type	Description
physical_used	integer	The number of bytes consumed on the disk by the LUN, excluding snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the LUN's snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
scsi_thin_provisioning_support_enabled	boolean	To leverage the benefits of SCSI thin provisioning, it must be supported by your host. SCSI thin provisioning uses the Logical Block Provisioning feature as defined in the SCSI SBC-3 standard. Only hosts that support this standard can use SCSI thin provisioning in ONTAP. When you disable SCSI thin provisioning support in ONTAP, you turn off the following SCSI thin provisioning features: • Unmapping and reporting space usage for space reclamation • Reporting resource exhaustion errors The value of this property is not propagated to the destination when a LUN is cloned as a new LUN or copied; it is reset to false. The value of this property is maintained from the destination LUN when a LUN is overwritten as a clone. Valid in POST and PATCH. • Default value: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not decreased using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

status

Status information about the LUN.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the LUN. LUNs are only available when their containers are available.
mapped	boolean	Reports if the LUN is mapped to one or more initiator groups. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the LUN allows only read access.
state	string	The state of the LUN. Normal states for a LUN are *online* and *offline*. Other states indicate errors.

svm

The SVM in which the LUN is located.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

partner

The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
name	string	The name of the partner LUN.
uuid	string	The unique identifier of the partner LUN.

bindings

A vVol binding with which the LUN is associated.

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
partner	partner	The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".

vvol

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings.

There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
bindings	array[bindings]	Bindings between the LUN, which must be of class `protocol_endpoint` or `vvol`, and LUNs of the opposite class. A class `vvol` LUN must be bound to a class `protocol_endpoint` LUN in order to be accessed. Class `protocol_endpoint` and `vvol` LUNs allow many-to-many bindings. A LUN of one class is allowed to be bound to zero or more LUNs of the opposite class. The binding between any two specific LUNs is reference counted. When a binding is created that already exists, the binding count is incremented. When a binding is deleted, the binding count is decremented, but the LUNs remain bound if the resultant reference count is greater than zero. When the binding count reaches zero, the binding is destroyed. The bindings array contains LUNs of the opposite class of the containing LUN object. There is an added computational cost to retrieving property values for `vvol.bindings`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
is_bound	boolean	Reports if the LUN is part of a VMware virtual volume (vVol) bind relationship. This is `true` if the LUN is of class `protocol_endpoint` or `vvol` and has one or more bindings to a LUN of the opposite class. This is false if the LUN is of class `regular` or unbound.

lun

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
attributes	array[attributes]	An array of name/value pairs optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP. Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes. Valid in POST except when creating a LUN clone. A cloned can already have attributes from its source. You can add, modify, and delete the attributes of a LUN clone in separate requests after creation of the LUN. Attributes can be added/modified/removed for an existing LUN using the /api/storage/luns/{lun.uuid}/attributes endpoint. For further information, see DOC /storage/luns/{lun.uuid}/attributes . There is an added computational cost to retrieving property values for `attributes`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. • Introduced in: 9.10 • readCreate: 1

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
class	string	The class of LUN. Optional in POST.

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
convert	convert	This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is desired.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6
lun_maps	array[lun_maps]	The LUN maps with which the LUN is associated. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported for GET only.

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
provisioning_options	provisioning_options	Options that are applied to the operation.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
status	status	Status information about the LUN.
svm	svm	The SVM in which the LUN is located.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete a LUN

DELETE `/storage/luns/{uuid}`

Introduced In: 9.6

Deletes a LUN.

Related ONTAP commands

- `lun copy cancel`
- `lun delete`

Learn more

- DOC /storage/luns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the LUN to retrieve.
allow_delete_while_mapped	boolean	query	False	Allows deletion of a mapped LUN. A mapped LUN might be in use. Deleting a mapped LUN also deletes the LUN map and makes the data no longer available. This might cause a disruption in the availability of data. **This parameter should be used with caution.** • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1254197	The LUN is mapped and cannot be deleted without specifying the `allow_delete_while_mapped` query parameter.
5374705	Deleting the LUN is not allowed because it is part of an application.
5374865	The LUN's aggregate is offline. The aggregate must be online to modify or remove the LUN.
5374866	The LUN's volume is offline. The volume must be online to modify or remove the LUN.
5374875	The specified LUN was not found.
5374876	The specified LUN was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve LUN properties or data

GET `/storage/luns/{uuid}`

Introduced In: 9.6

Retrieves a LUN's properties or a LUN's data.

LUN data read requests are distinguished by the header entry `Accept: multipart/form-data`. When this header entry is provided, query parameters `data.offset` and `data.size` are required and used to specify the portion of the LUN's data to read; no other query parameters are allowed. Reads are limited to one megabyte (1MB) per request. Data is returned as `multipart/form-data` content with exactly one form entry containing the data. The form entry has content type `application/octet-stream`.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `attributes.*`
- `auto_delete`
- `copy.*`
- `lun_maps.*`

- `movement.*`
- `space.physical_used`
- `space.physical_used_by_snapshots`
- `space.efficiency_ratio`
- `statistics.*`
- `vvol.bindings.*`
- `metric.*`

Related ONTAP commands

- `lun bind show`
- `lun copy show`
- `lun mapping show`
- `lun move show`
- `lun show`
- `volume file clone show-autodelete`

Learn more

- DOC /storage/luns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the LUN to retrieve.

Name	Type	In	Required	Description
data.offset	integer	query	False	The offset, in bytes, at which to begin reading LUN data. LUN data read requests are distinguished by the header entry `Accept: multipart/form-data`. When this header entry is provided, query parameters `data.offset` and `data.size` are required and used to specify the portion of the LUN's data to read; no other query parameters are allowed. Reads are limited to one megabyte (1MB) per request. Data is returned as `multipart/form-data` content with exactly one form entry containing the data. The form entry has content type `application/octet-stream`. • format: int64 • Min value: 0 • Introduced in: 9.11

Name	Type	In	Required	Description
data.size	integer	query	False	The size, in bytes, of LUN data to read. LUN data read requests are distinguished by the header entry `Accept: multipart/form-data`. When this header entry is provided, query parameters `data.offset` and `data.size` are required and used to specify the portion of the LUN's data to read; no other query parameters are allowed. Reads are limited to one megabyte (1MB) per request. Data is returned as `multipart/form-data` content with exactly one form entry containing the data. The form entry has content type `application/octet-stream`. • format: int64 • Min value: 1 • Introduced in: 9.11 • Max value: 1048576
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
attributes	array[attributes]	An array of name/value pairs optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP. Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes. Valid in POST except when creating a LUN clone. A cloned can already have attributes from its source. You can add, modify, and delete the attributes of a LUN clone in separate requests after creation of the LUN. Attributes can be added/modified/removed for an existing LUN using the /api/storage/luns/{lun.uuid}/attributes endpoint. For further information, see DOC /storage/luns/{lun.uuid}/attributes . There is an added computational cost to retrieving property values for `attributes`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. • Introduced in: 9.10 • readCreate: 1

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
class	string	The class of LUN. Optional in POST.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, check the `status.state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6
lun_maps	array[lun_maps]	The LUN maps with which the LUN is associated. There is an added computational cost to retrieving property values for `lun_maps`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more. These properties are supported for GET only.
metric	metric	Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
os_type	string	The operating system type of the LUN. Required in POST when creating a LUN that is not a clone of another. Disallowed in POST when creating a LUN clone.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	status	Status information about the LUN.
svm	svm	The SVM in which the LUN is located.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "attributes": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "name1",
      "value": "value1"
    }
  ],
  "class": "string",
  "comment": "string",
  "consistency_group": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "copy": {
    "destinations": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": 0,
        "name": "/vol/vol1/lun1",
        "peer": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
```

```
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "progress": {
          "elapsed": 0,
          "failure": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          },
          "percent_complete": 0,
          "state": "string"
        },
        "uuid": "1bc327d5-4654-5284-a116-f182282240b4"
      }
    ],
    "source": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/vol2/lun1",
      "peer": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      },
      "progress": {
        "elapsed": 0,
        "failure": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
```

```
          "code": "4",
          "message": "entry doesn't exist"
        },
        "percent_complete": 0,
        "state": "string"
      },
      "uuid": "03c05019-40d9-3945-c767-dca4c3be5e90"
    }
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "location": {
    "logical_unit": "lun1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "qtree": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 1,
      "name": "qt1"
    },
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "lun_maps": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
```

```
      },
      "igroup": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "comment": "string",
        "igroups": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "igroup1",
            "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "initiators": [
          {
            "comment": "my comment",
            "name": "iqn.1998-01.com.corp.iscsi:name1"
          }
        ],
        "name": "igroup1",
        "os_type": "string",
        "protocol": "string",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
```

```
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "movement": {
    "paths": {
      "destination": "/vol/vol1/lun1",
      "source": "/vol/vol2/lun2"
    },
    "progress": {
      "elapsed": 0,
      "failure": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "percent_complete": 0,
      "state": "string"
    }
  },
  "name": "/vol/volume1/qtree1/lun1",
  "os_type": "string",
  "qos_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "qos1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "serial_number": "string",
  "serial_number_hex": "string",
  "space": {
```

```
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "status": {
    "container_state": "string",
    "state": "online"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vvol": {
    "bindings": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "id": 1,
        "partner": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/vol1/lun1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        },
        "secondary_id": "0000D20000010000h"
      }
    ]
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN was not found.
5374876	The specified LUN was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

attributes

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Optional in POST.

Name	Type	Description
_links	_links	
name	string	The attribute name.
value	string	The attribute value.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

consistency_group

The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
_links	_links	
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

namespace

The source namespace for convert operation. This can be specified using property `convert.namespace.uuid` or `convert.namespace.name`. If both properties are supplied, they must refer to the same NVMe namespace.

Valid in POST. A convert request from NVMe namespace to LUN cannot be combined with setting any other LUN properties. All other properties of the converted LUN come from the source NVMe namespace.

convert

This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is desired.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

This is only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Error information provided if the asynchronous LUN copy operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
failure	error	Error information provided if the asynchronous LUN copy operation fails.
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

destinations

A LUN copy operation in which the containing LUN is the source of the copy.

Name	Type	Description
_links	_links	
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. See property `copy.source.max_throughput` for further details.
name	string	The fully qualified path of the LUN copy destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. This is only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy destination.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
_links	_links	
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.

Name	Type	Description
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
failure	error	Error information provided if the asynchronous LUN copy operation fails.
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy. Valid in PATCH when an LUN copy is active. Set to *paused* to pause a LUN copy. Set to *replicating* to resume a paused LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

source

The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy.

Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN copy, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. Valid only in a POST that begins a LUN copy or a PATCH when a LUN copy is already in process. • format: int64 • Introduced in: 9.10 • x-nullable: true
name	string	The fully qualified path of the LUN copy source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN. Set this property in POST to specify the source for a LUN copy operation.

Name	Type	Description
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy source. Set this property in POST to specify the source for a LUN copy operation.

copy

This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties.

Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy.

While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN.

There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
destinations	array[destinations]	An array of destination LUNs of LUN copy operations in which the containing LUN is the source of the copy.
source	source	The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy. Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

node

The cluster node that hosts the LUN.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

qtree

The qtree in which the LUN is optionally located. Valid in POST and PATCH.

If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree.

A PATCH that modifies the qtree of the LUN is considered a rename operation.

Name	Type	Description
_links	_links	
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the LUN is located. Valid in POST and PATCH.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the LUN within the ONTAP cluster.
LUNs support rename and move between volumes. Valid in POST and PATCH.

Name	Type	Description
logical_unit	string	The base name component of the LUN. Valid in POST and PATCH. If properties `name` and `location.logical_unit` are specified in the same request, they must refer to the base name. A PATCH that modifies the base name of the LUN is considered a rename operation.
node	node	The cluster node that hosts the LUN.

Name	Type	Description
qtree	qtree	The qtree in which the LUN is optionally located. Valid in POST and PATCH. If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree. A PATCH that modifies the qtree of the LUN is considered a rename operation.
volume	volume	The volume in which the LUN is located. Valid in POST and PATCH. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

self_link

Name	Type	Description
self	href	

igroups

Name	Type	Description
_links	self_link	
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group to which the LUN is mapped.

Name	Type	Description
_links	_links	
comment	string	A comment available for use by the administrator. Valid in POST and PATCH.

Name	Type	Description
igroups	array[igroups]	The existing initiator groups that are members of the group. Optional in POST. This property is mutually exclusive with the *initiators* property during POST. This array contains only the direct children of the initiator group. If the member initiator groups have further nested initiator groups, those are reported in the `igroups` property of the child initiator group. Zero or more nested initiator groups can be supplied when the initiator group is created. The initiator group will act as if it contains the aggregation of all initiators in any nested initiator groups. After creation, nested initiator groups can be added or removed from the initiator group using the `/protocols/san/igroups/{igroup.uuid}/igroups` endpoint. See DELETE /protocols/san/igroups/{igroup.uuid}/igroups/{uuid} for more details.
initiators	array[initiators]	The initiators that are members of the group.
name	string	The name of the initiator group.
os_type	string	The host operating system of the initiator group. All initiators in the group should be hosts of the same operating system.

Name	Type	Description
protocol	string	The protocols supported by the initiator group. This restricts the type of initiators that can be added to the initiator group. Optional in POST; if not supplied, this defaults to *mixed*. The protocol of an initiator group cannot be changed after creation of the group.
uuid	string	The unique identifier of the initiator group.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

Name	Type	Description
_links	_links	
igroup	igroup	The initiator group to which the LUN is mapped.
logical_unit_number	integer	The logical unit number assigned to the LUN when mapped to the specified initiator group. The number is used to identify the LUN to initiators in the initiator group when communicating through the Fibre Channel Protocol or iSCSI. Optional in POST; if no value is provided, ONTAP assigns the lowest available value. This property is not supported when the *provisioning_options.count* property is 2 or more. • Introduced in: 9.6 • readCreate: 1 • x-nullable: true

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

paths

The fully qualified LUN path names involved in the LUN movement.

Name	Type	Description
destination	string	The fully qualified path of the LUN movement destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

Name	Type	Description
source	string	The fully qualified path of the LUN movement source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

error

Error information provided if the asynchronous LUN movement operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN movement.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN movement, in seconds.
failure	error	Error information provided if the asynchronous LUN movement operation fails.
percent_complete	integer	The percentage completed of the LUN movement.
state	string	The state of the LUN movement. Valid in PATCH when an LUN movement is active. Set to *paused* to pause a LUN movement. Set to *replicating* to resume a paused LUN movement.

Name	Type	Description
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN movement. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN movement.

movement

This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume.

Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement.

While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object.

There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN movement. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN movement, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. This property is valid only in a POST that begins a LUN movement or a PATCH when a LUN movement is already in process. • format: int64 • Introduced in: 9.6 • x-nullable: true
paths	paths	The fully qualified LUN path names involved in the LUN movement.
progress	progress	Properties related to the progress of an active or recently completed LUN movement.

qos_policy

The QoS policy for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume. This property is mutually exclusive with the LUN granular `qos_policy`. If no `qos_policy` is provided at LUN or volume granularity, a volume granular policy is set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
_links	self_link	

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_service

Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

object_stores

tiering

The tiering placement and policy definitions for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume.

Name	Type	Description
object_stores	array[object_stores]	Object stores to use. Used for placement.

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ Allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ Allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks are not be tiered to the cloud store. snapshot_only ‐ Allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy it is 31 days.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
storage_service	storage_service	Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

qos_policy

The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
_links	_links	
name	string	The name of the QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set this property to an empty string ("") in a PATCH request. Valid in POST and PATCH.
uuid	string	The unique identifier of the QoS policy. Valid in POST and PATCH.

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH. This property is caller settable as described above.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
efficiency_ratio	number	The storage efficiency ratio of the LUN without snapshots. (Logical Used / Used) This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
physical_used	integer	The number of bytes consumed on the disk by the LUN, excluding snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the LUN's snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
scsi_thin_provisioning_support_enabled	boolean	To leverage the benefits of SCSI thin provisioning, it must be supported by your host. SCSI thin provisioning uses the Logical Block Provisioning feature as defined in the SCSI SBC-3 standard. Only hosts that support this standard can use SCSI thin provisioning in ONTAP. When you disable SCSI thin provisioning support in ONTAP, you turn off the following SCSI thin provisioning features: • Unmapping and reporting space usage for space reclamation • Reporting resource exhaustion errors The value of this property is not propagated to the destination when a LUN is cloned as a new LUN or copied; it is reset to false. The value of this property is maintained from the destination LUN when a LUN is overwritten as a clone. Valid in POST and PATCH. • Default value: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not decreased using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

status

Status information about the LUN.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the LUN. LUNs are only available when their containers are available.
mapped	boolean	Reports if the LUN is mapped to one or more initiator groups. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the LUN allows only read access.
state	string	The state of the LUN. Normal states for a LUN are *online* and *offline*. Other states indicate errors.

svm

The SVM in which the LUN is located.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

partner

The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
_links	_links	
name	string	The name of the partner LUN.
uuid	string	The unique identifier of the partner LUN.

bindings

A vVol binding with which the LUN is associated.

Name	Type	Description
_links	_links	

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
partner	partner	The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".

vvol

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings.

There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
bindings	array[bindings]	Bindings between the LUN, which must be of class `protocol_endpoint` or `vvol`, and LUNs of the opposite class. A class `vvol` LUN must be bound to a class `protocol_endpoint` LUN in order to be accessed. Class `protocol_endpoint` and `vvol` LUNs allow many-to-many bindings. A LUN of one class is allowed to be bound to zero or more LUNs of the opposite class. The binding between any two specific LUNs is reference counted. When a binding is created that already exists, the binding count is incremented. When a binding is deleted, the binding count is decremented, but the LUNs remain bound if the resultant reference count is greater than zero. When the binding count reaches zero, the binding is destroyed. The bindings array contains LUNs of the opposite class of the containing LUN object. There is an added computational cost to retrieving property values for `vvol.bindings`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
is_bound	boolean	Reports if the LUN is part of a VMware virtual volume (vVol) bind relationship. This is `true` if the LUN is of class `protocol_endpoint` or `vvol` and has one or more bindings to a LUN of the opposite class. This is false if the LUN is of class `regular` or unbound.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an existing LUN

PATCH `/storage/luns/{uuid}`

Introduced In: 9.6

Updates an existing LUN in one of several ways:

- Updates the properties of a LUN.
- Writes data to a LUN. LUN data write requests are distinguished by the header entry `Content-Type: multipart/form-data`. When this header entry is provided, query parameter `data.offset` is required and used to specify the location within the LUN at which to write the data; no other query parameters are allowed. The request body must be `multipart/form-data` content with exactly one form entry containing the data to write. The content type entry of the form data is ignored and always treated as `application/octet-stream`. Writes are limited to one megabyte (1MB) per request.
- Overwrites the contents of a LUN as a clone of another.
- Begins the movement of a LUN between volumes. PATCH can also pause and resume the movement of a LUN between volumes that is already in active.

Related ONTAP commands

- `lun copy modify`
- `lun copy pause`

- `lun copy resume`
- `lun modify`
- `lun move-in-volume`
- `lun move modify`
- `lun move pause`
- `lun move resume`
- `lun move start`
- `lun resize`
- `volume file clone autodelete`

Learn more

- DOC /storage/luns

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier of the LUN to retrieve.

Name	Type	In	Required	Description
data.offset	integer	query	False	The offset, in bytes, at which to begin writing LUN data. LUN data write requests are distinguished by the header entry `Content-Type: multipart/form-data`. When this header entry is provided, query parameter `data.offset` is required and used to specify the location within the LUN at which to write the data; no other query parameters are allowed. The request body must be `multipart/form-data` content with exactly one form entry containing the data to write. The content type entry of the form data is ignored and always treated as `application/octet-stream`. Writes are limited to one megabyte (1MB) per request. • format: int64 • Min value: 0 • Introduced in: 9.11

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Min value: 0 • Default value: 1 • Max value: 120

Request Body

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, check the `status.state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
status	status	Status information about the LUN.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Example request


```
{
  "clone": {
    "source": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "comment": "string",
  "consistency_group": {
    "name": "cg1",
    "uuid": "4abc2317-4332-9d37-93a0-20bd29c22df0"
  },
  "copy": {
    "destinations": [
      {
        "max_throughput": 0,
        "name": "/vol/vol1/lun1",
        "peer": {
          "name": "peer1",
          "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
        },
        "progress": {
          "elapsed": 0,
          "percent_complete": 0,
          "state": "string"
        },
        "uuid": "1bc327d5-4654-5284-a116-f182282240b4"
      }
    ],
    "source": {
      "peer": {
        "name": "peer1",
        "uuid": "4204cf77-4c82-9bdb-5644-b5a841c097a9"
      },
      "progress": {
        "elapsed": 0,
        "percent_complete": 0,
        "state": "string"
      }
    }
  },
  "create_time": "2018-06-04 15:00:00 -0400",
  "location": {
    "logical_unit": "lun1",
```

```
    "node": {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "qtree": {
      "id": 1,
      "name": "qt1"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "movement": {
    "paths": {
      "destination": "/vol/vol1/lun1",
      "source": "/vol/vol2/lun2"
    },
    "progress": {
      "elapsed": 0,
      "percent_complete": 0,
      "state": "string"
    }
  },
  "name": "/vol/volume1/qtree1/lun1",
  "qos_policy": {
    "name": "qos1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "serial_number": "string",
  "serial_number_hex": "string",
  "space": {
    "efficiency_ratio": 2.5,
    "physical_used": 1073741824,
    "physical_used_by_snapshots": 1073741824,
    "size": 1073741824,
    "used": 0
  },
  "status": {
    "container_state": "string",
    "state": "online"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vvol": {
    "bindings": [
      {
```

```
        "id": 1,
        "partner": {
          "name": "/vol/vol1/lun1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
        },
        "secondary_id": "0000D20000010000h"
      }
    ]
  }
}
```


Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917927	The specified volume was not found.
918236	The specified `location.volume.uuid` and `location.volume.name` do not refer to the same volume.
1254196	A LUN already exists at the specified path.
1254226	Cannot patch a LUN's size to its current size.
5242927	The specified qtree was not found.
5242950	The specified `location.qtree.id` and `location.qtree.name` do not refer to the same qtree.
5374124	The specified LUN size is too small.
5374125	The specified LUN size is too large.
5374127	The specified LUN name is invalid.

Error Code	Description
5374130	An invalid size value was provided.
5374241	A size value with invalid units was provided.
5374480	Modifying the LUN is not allowed because it is in a foreign LUN import relationship.
5374858	The volume specified by `name` is not the same as that specified by `location.volume`.
5374860	The qtree specified by `name` is not the same as that specified by `location.qtree`.
5374861	The LUN base name specified by `name` is not the same as that specified by `location.logical_unit`.
5374864	An error occurred after successfully overwriting data for the LUN as a clone. Some properties were not modified.
5374865	The LUN's aggregate is offline. The aggregate must be online to modify or remove the LUN.
5374866	The LUN's volume is offline. The volume must be online to modify or remove the LUN.
5374874	The specified `clone.source.uuid` and `clone.source.name` do not refer to the same LUN.
5374875	The specified LUN was not found. This can apply to `clone.source` or the target LUN. The `target` property of the error object identifies the property.
5374876	The specified LUN was not found. This can apply to `clone.source` or the target LUN. The `target` property of the error object identifies the property.
5374885	An error occurred after successfully modifying some of the properties of the LUN. Some properties were not modified.
5374889	An invalid value was specified for `movement.progress.state`. Active LUN movement operations can be PATCHed to only *paused* or *replicating*.
5374892	An attempt was made to reduce the size of a LUN.
5374904	The destination volume is not online.
5375059	An unsuitable QoS policy was specified.
5376461	The specified LUN name is invalid.
5376462	The specified LUN name is too long.
5376463	The snapshot portion of the specified LUN name is too long.

Error Code	Description
5376466	An attempt was made to rename a LUN to a snapshot name.
5376467	An attempt was made to rename a primary LUN to a secondary name.
5376468	An attempt was made to rename a LUN to a reserved name.
5376470	The property cannot be set during the LUN modify operation on this platform.
7018877	Maximum combined total (50) of file and LUN copy and move operations reached. When one or more of the operations has completed, try the command again.
7018919	A copy or move job exists with the same destination LUN.
8454243	The specified QoS policy does not exist while modifying a LUN.
13565952	The LUN clone request failed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

attributes

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Optional in POST.

source

The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN.

Valid in POST to create a new LUN as a clone of the source.

Valid in PATCH to overwrite an existing LUN's data as a clone of another.

Name	Type	Description
name	string	The name of the clone source LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional. Valid in POST and PATCH.
uuid	string	The unique identifier of the clone source LUN. Valid in POST and PATCH.

clone

This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`,

`qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`.

When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`.

Persistent reservations for the patched LUN are also preserved.

Name	Type	Description
source	source	The source LUN for a LUN clone operation. This can be specified using property `clone.source.uuid` or `clone.source.name`. If both properties are supplied, they must refer to the same LUN. Valid in POST to create a new LUN as a clone of the source. Valid in PATCH to overwrite an existing LUN's data as a clone of another.

consistency_group

The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
name	string	The name of the consistency group.
uuid	string	The unique identifier of the consistency group.

namespace

The source namespace for convert operation. This can be specified using property `convert.namespace.uuid` or `convert.namespace.name`. If both properties are supplied, they must refer to the same NVMe namespace.

Valid in POST. A convert request from NVMe namespace to LUN cannot be combined with setting any other LUN properties. All other properties of the converted LUN come from the source NVMe namespace.

convert

This sub-object is used in POST to convert a valid in-place NVMe namespace to a LUN. Setting a property in this sub-object indicates that a conversion from the specified NVMe namespace to LUN is

desired.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

This is only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Error information provided if the asynchronous LUN copy operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.

Name	Type	Description
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

destinations

A LUN copy operation in which the containing LUN is the source of the copy.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. See property `copy.source.max_throughput` for further details.
name	string	The fully qualified path of the LUN copy destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. This is only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.
uuid	string	The unique identifier of the LUN copy destination.

peer

The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM.

Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.

Name	Type	Description
name	string	The local name of the peer SVM. This name is unique among all local and peer SVMs.
uuid	string	The unique identifier of the SVM peer relationship. This is the UUID of the relationship, not the UUID of the peer SVM itself.

progress

Properties related to the progress of an active or recently completed LUN copy.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN copy, in seconds.
percent_complete	integer	The percentage completed of the LUN copy.
state	string	The state of the LUN copy. Valid in PATCH when an LUN copy is active. Set to *paused* to pause a LUN copy. Set to *replicating* to resume a paused LUN copy.
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN copy. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN copy.

source

The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy.

Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting

any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN copy. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN copy, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. Valid only in a POST that begins a LUN copy or a PATCH when a LUN copy is already in process. • format: int64 • Introduced in: 9.10 • x-nullable: true
peer	peer	The SVM peer relationship object for an inter-SVM LUN copy operation. The peer SVM in the relationship is the source SVM and the local SVM is the destination SVM. Set this in POST to specify the source SVM for an inter-SVM LUN copy. Only populated by GET when the LUN copy is inter-SVM.
progress	progress	Properties related to the progress of an active or recently completed LUN copy.

copy

This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties.

Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy.

While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN.

There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
destinations	array[destinations]	An array of destination LUNs of LUN copy operations in which the containing LUN is the source of the copy.
source	source	The source LUN of a LUN copy operation in which the containing LUN is the destination of the copy. Valid in POST except when creating a LUN clone. A LUN copy request cannot be combined with setting any other LUN properties except the destination location. All other properties of the destination LUN come from the source LUN.

node

The cluster node that hosts the LUN.

Name	Type	Description
name	string	
uuid	string	

qtree

The qtree in which the LUN is optionally located. Valid in POST and PATCH.

If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree.

A PATCH that modifies the qtree of the LUN is considered a rename operation.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

volume

The volume in which the LUN is located. Valid in POST and PATCH.

If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume.

A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

location

The location of the LUN within the ONTAP cluster.
LUNs support rename and move between volumes. Valid in POST and PATCH.

Name	Type	Description
logical_unit	string	The base name component of the LUN. Valid in POST and PATCH. If properties `name` and `location.logical_unit` are specified in the same request, they must refer to the base name. A PATCH that modifies the base name of the LUN is considered a rename operation.
node	node	The cluster node that hosts the LUN.
qtree	qtree	The qtree in which the LUN is optionally located. Valid in POST and PATCH. If properties `name` and `location.qtree.name` and/or `location.qtree.id` are specified in the same request, they must refer to the same qtree. A PATCH that modifies the qtree of the LUN is considered a rename operation.
volume	volume	The volume in which the LUN is located. Valid in POST and PATCH. If properties `name` and `location.volume.name` and/or `location.volume.uuid` are specified in the same request, they must refer to the same volume. A PATCH that modifies the volume of the LUN begins an asynchronous LUN movement operation.

self_link

igroups

Name	Type	Description
name	string	The name of the initiator group.
uuid	string	The unique identifier of the initiator group.

initiators

The initiators that are members of the initiator group.

Name	Type	Description
comment	string	A comment available for use by the administrator.
name	string	Name of initiator that is a member of the initiator group.

igroup

The initiator group to which the LUN is mapped.

lun_maps

A LUN map is an association between a LUN and an initiator group.

When a LUN is mapped to an initiator group, the initiator group's initiators are granted access to the LUN. The relationship between a LUN and an initiator group is many LUNs to many initiator groups.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

paths

The fully qualified LUN path names involved in the LUN movement.

Name	Type	Description
destination	string	The fully qualified path of the LUN movement destination composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.
source	string	The fully qualified path of the LUN movement source composed of a "/vol" prefix, the volume name, the optional qtree name, and base name of the LUN.

error

Error information provided if the asynchronous LUN movement operation fails.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

progress

Properties related to the progress of an active or recently completed LUN movement.

Name	Type	Description
elapsed	integer	The amount of time that has elapsed since the start of the LUN movement, in seconds.
percent_complete	integer	The percentage completed of the LUN movement.
state	string	The state of the LUN movement. Valid in PATCH when an LUN movement is active. Set to *paused* to pause a LUN movement. Set to *replicating* to resume a paused LUN movement.

Name	Type	Description
volume_snapshot_blocked	boolean	This property reports if volume snapshots are blocked by the LUN movement. This property can be polled to identify when volume snapshots can be resumed after beginning a LUN movement.

movement

This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume.

Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement.

While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object.

There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
max_throughput	integer	The maximum data throughput, in bytes per second, that should be utilized in support of the LUN movement. This property can be used to throttle a transfer and limit its impact on the performance of the source and destination nodes. The specified value will be rounded up to the nearest megabyte. If this property is not specified in a POST that begins a LUN movement, throttling is not applied to the data transfer. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. This property is valid only in a POST that begins a LUN movement or a PATCH when a LUN movement is already in process. • format: int64 • Introduced in: 9.6 • x-nullable: true
paths	paths	The fully qualified LUN path names involved in the LUN movement.
progress	progress	Properties related to the progress of an active or recently completed LUN movement.

qos_policy

The QoS policy for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume. This property is mutually exclusive with the LUN granular `qos_policy`. If no `qos_policy` is provided at LUN or volume granularity, a volume granular policy is set based on the `storage_service.name`, which defaults to the most performant service available.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

snapshot_policy_reference

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage_service

Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

object_stores

Name	Type	Description
name	string	The name of the object store to use. Used for placement.

tiering

The tiering placement and policy definitions for the volume provisioned to host the LUN. This property is only supported when the request provisions a new volume.

Name	Type	Description
control	string	Storage tiering placement rules for the object.
object_stores	array[object_stores]	Object stores to use. Used for placement.

provisioning_options

Options that are applied to the operation.

Name	Type	Description
storage_service	storage_service	Determines the placement of the LUN based on the value specified. This property is only supported for regular and vvol LUNs. Valid in POST.

qos_policy

The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.

Name	Type	Description
name	string	The name of the QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set this property to an empty string ("") in a PATCH request. Valid in POST and PATCH.
uuid	string	The unique identifier of the QoS policy. Valid in POST and PATCH.

guarantee

Properties that request and report the space guarantee for the LUN.

Name	Type	Description
requested	boolean	The requested space reservation policy for the LUN. If *true*, a space reservation is requested for the LUN; if *false*, the LUN is thin provisioned. Guaranteeing a space reservation request for a LUN requires that the volume in which the LUN resides is also space reserved and that the fractional reserve for the volume is 100%. Valid in POST and PATCH. This property is caller settable as described above.

Name	Type	Description
reserved	boolean	Reports if the LUN is space guaranteed. If *true*, a space guarantee is requested and the containing volume and aggregate support the request. If *false*, a space guarantee is not requested or a space guarantee is requested and either the containing volume or aggregate do not support the request.

space

The storage space related properties of the LUN.

Name	Type	Description
efficiency_ratio	number	The storage efficiency ratio of the LUN without snapshots. (Logical Used / Used) This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
guarantee	guarantee	Properties that request and report the space guarantee for the LUN.
physical_used	integer	The number of bytes consumed on the disk by the LUN, excluding snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.
physical_used_by_snapshots	integer	The number of bytes consumed on the disk by the LUN's snapshots. This property is not available on the LUN object in the REST API and is not reported for GET requests. See the containing volume object for this information.

Name	Type	Description
scsi_thin_provisioning_support_enabled	boolean	To leverage the benefits of SCSI thin provisioning, it must be supported by your host. SCSI thin provisioning uses the Logical Block Provisioning feature as defined in the SCSI SBC-3 standard. Only hosts that support this standard can use SCSI thin provisioning in ONTAP. When you disable SCSI thin provisioning support in ONTAP, you turn off the following SCSI thin provisioning features: • Unmapping and reporting space usage for space reclamation • Reporting resource exhaustion errors The value of this property is not propagated to the destination when a LUN is cloned as a new LUN or copied; it is reset to false. The value of this property is maintained from the destination LUN when a LUN is overwritten as a clone. Valid in POST and PATCH. • Default value: 1 • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
size	integer	The total provisioned size of the LUN. The LUN size can be increased but not decreased using the REST interface. The maximum and minimum sizes listed here are the absolute maximum and absolute minimum sizes, in bytes. The actual minimum and maximum sizes vary depending on the ONTAP version, ONTAP platform and the available space in the containing volume and aggregate. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • example: 1073741824 • format: int64 • Max value: 140737488355328 • Min value: 4096 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
used	integer	The amount of space consumed by the main data stream of the LUN. This value is the total space consumed in the volume by the LUN, including filesystem overhead, but excluding prefix and suffix streams. Due to internal filesystem overhead and the many ways SAN filesystems and applications utilize blocks within a LUN, this value does not necessarily reflect actual consumption/availability from the perspective of the filesystem or application. Without specific knowledge of how the LUN blocks are utilized outside of ONTAP, this property should not be used as an indicator for an out-of-space condition. For more information, see *Size properties* in the *docs* section of the ONTAP REST API documentation. • format: int64 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

status

Status information about the LUN.

Name	Type	Description
container_state	string	The state of the volume and aggregate that contain the LUN. LUNs are only available when their containers are available.
mapped	boolean	Reports if the LUN is mapped to one or more initiator groups. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
read_only	boolean	Reports if the LUN allows only read access.
state	string	The state of the LUN. Normal states for a LUN are *online* and *offline*. Other states indicate errors.

svm

The SVM in which the LUN is located.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

partner

The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
name	string	The name of the partner LUN.
uuid	string	The unique identifier of the partner LUN.

bindings

A vVol binding with which the LUN is associated.

Name	Type	Description
id	integer	The ONTAP internal identifier assigned to the vVol binding. The bind identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. This property was included in early releases of the REST API for vVols and is maintained for backward compatibility. See the `secondary_id` property, which replaces `id`. • example: 1 • readOnly: 1 • x-ntap-deprecated: 9.13.1 • Introduced in: 9.10 • x-nullable: true
partner	partner	The LUN partner that this LUN is bound to. If this LUN is a `vvol` class LUN, the partner is a `protocol_endpoint` class LUN.

Name	Type	Description
secondary_id	string	The identifier assigned to the vVol binding, known as the secondary LUN ID. The identifier is unique amongst all class `vvol` LUNs bound to the same class `protocol_endpoint` LUN. The format for a secondary LUN ID is 16 hexadecimal digits (zero-filled) followed by a lower case "h".

vvol

A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping.

See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings.

There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
bindings	array[bindings]	Bindings between the LUN, which must be of class `protocol_endpoint` or `vvol`, and LUNs of the opposite class. A class `vvol` LUN must be bound to a class `protocol_endpoint` LUN in order to be accessed. Class `protocol_endpoint` and `vvol` LUNs allow many-to-many bindings. A LUN of one class is allowed to be bound to zero or more LUNs of the opposite class. The binding between any two specific LUNs is reference counted. When a binding is created that already exists, the binding count is incremented. When a binding is deleted, the binding count is decremented, but the LUNs remain bound if the resultant reference count is greater than zero. When the binding count reaches zero, the binding is destroyed. The bindings array contains LUNs of the opposite class of the containing LUN object. There is an added computational cost to retrieving property values for `vvol.bindings`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
is_bound	boolean	Reports if the LUN is part of a VMware virtual volume (vVol) bind relationship. This is `true` if the LUN is of class `protocol_endpoint` or `vvol` and has one or more bindings to a LUN of the opposite class. This is false if the LUN is of class `regular` or unbound.

lun

A LUN is the logical representation of storage in a storage area network (SAN).

A LUN must be mapped to an initiator group to grant access to the initiator group's initiators (client hosts). Initiators can then access the LUN and perform I/O over a Fibre Channel (FC) fabric using the FC Protocol or a TCP/IP network using iSCSI.

See the LUN object model to learn more about each of the properties supported by the LUN REST API.

A LUN is located within a volume. Optionally, it can be located within a qtree in a volume.

LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional.

A LUN can be created to a specified size using thin or thick provisioning. A LUN can then be renamed, resized, cloned, moved to a different volume and copied. LUNs support the assignment of a QoS policy for performance management or a QoS policy can be assigned to a volume containing one or more LUNs.

</lun></qtree></volume>

Name	Type	Description
auto_delete	boolean	This property marks the LUN for auto deletion when the volume containing the LUN runs out of space. This is most commonly set on LUN clones. When set to *true*, the LUN becomes eligible for automatic deletion when the volume runs out of space. Auto deletion only occurs when the volume containing the LUN is also configured for auto deletion and free space in the volume decreases below a particular threshold. This property is optional in POST and PATCH. The default value for a new LUN is *false*. There is an added computational cost to retrieving this property's value. It is not populated for a GET request unless it is explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
clone	clone	This sub-object is used in POST to create a new LUN as a clone of an existing LUN, or PATCH to overwrite an existing LUN as a clone of another. Setting a property in this sub-object indicates that a LUN clone is desired. Consider the following other properties when cloning a LUN: `auto_delete`, `qos_policy`, `space.guarantee.requested` and `space.scsi_thin_provisioning_support_enabled`. When used in a PATCH, the patched LUN's data is over-written as a clone of the source and the following properties are preserved from the patched LUN unless otherwise specified as part of the PATCH: `class`, `auto_delete`, `lun_maps`, `serial_number`, `status.state`, and `uuid`. Persistent reservations for the patched LUN are also preserved.
comment	string	A configurable comment available for use by the administrator. Valid in POST and PATCH.
consistency_group	consistency_group	The LUN's consistency group. This property is populated for LUNs that are members of a consistency group. If the LUN is a member of a child consistency group, the parent consistency group is reported. A LUN's consistency group is the consistency group of its containing volume.

Name	Type	Description
copy	copy	This sub-object applies to LUN copy operations. A LUN can be copied with a POST request that supplies `copy.source` properties. Copying a LUN is an asynchronous activity begun by a POST request that specifies the source of the copy in the `copy.source` properties. The data for the LUN is then asynchronously copied from the source to the destination. The time required to complete the copy depends on the size of the LUN and the load on the cluster. The `copy` sub-object is populated while a LUN copy is in progress and for two (2) minutes following completion of a copy. While LUNs are being copied, the status of the LUN copy operations can be obtained using a GET of the source or destination LUN that requests the `copy` properties. If the LUN is the source LUN for one or more copy operations, the `copy.destinations` array is populated in GET. If the containing LUN is the destination LUN for a copy operation, the `copy.source` sub-object is populated in GET. The LUN copy operation can be further modified using a PATCH on the properties on the `copy.source` sub-object of the copy destination LUN. There is an added computational cost to retrieving property values for `copy`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.
create_time	string	The time the LUN was created.

Name	Type	Description
enabled	boolean	The enabled state of the LUN. LUNs can be disabled to prevent access to the LUN. Certain error conditions also cause the LUN to become disabled. If the LUN is disabled, check the `status.state` property to determine if the LUN is administratively disabled (*offline*) or has become disabled as a result of an error. A LUN in an error condition can be brought online by setting the `enabled` property to *true* or brought administratively offline by setting the `enabled` property to *false*. Upon creation, a LUN is enabled by default. Valid in PATCH.
location	location	The location of the LUN within the ONTAP cluster. LUNs support rename and move between volumes. Valid in POST and PATCH. • Introduced in: 9.6

Name	Type	Description
movement	movement	This sub-object applies to LUN movement between volumes. A LUN can be moved to a new volume with a PATCH request that changes either the volume portion of property `name`, `location.volume.uuid`, or `location.volume.name`. If the volume is changed using more than one of these properties, the supplied properties used must refer to the same volume. Moving a LUN between volumes is an asynchronous activity begun by a PATCH request. The data for the LUN is then asynchronously copied from the source volume to the destination volume. The time required to complete the move depends on the size of the LUN and the load on the cluster. The `movement` sub-object is populated while a LUN movement is in progress and for two (2) minutes following completion of a movement. While the LUN is being moved, the status of the LUN movement operation can be obtained using a GET for the LUN that requests the `movement` properties. The LUN movement operation can be further modified using a PATCH on the properties on the `movement` sub-object. There is an added computational cost to retrieving property values for `movement`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

Name	Type	Description
name	string	The name of the LUN. Valid in POST and PATCH. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<lun>" where the qtree name is optional. A PATCH that modifies the qtree and/or base name portion of the LUN path is considered a rename operation. A PATCH that modifies the volume portion of the LUN path begins an asynchronous LUN movement operation.
qos_policy	qos_policy	The QoS policy for the LUN. Both traditional and adaptive QoS policies are supported. If both property `qos_policy.uuid` and `qos_policy.name` are specified in the same request, they must refer to the same QoS policy. To remove the QoS policy from a LUN, leaving it with no QoS policy, set the property `qos_policy.name` to an empty string ("") in a PATCH request. Valid in POST and PATCH.
serial_number	string	The LUN serial number. The serial number is generated by ONTAP when the LUN is created. • maxLength: 12 • minLength: 12 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
serial_number_hex	string	The LUN serial number encoded in hexadecimal format. The serial number is generated by ONTAP when the LUN is created. • readOnly: 1 • Introduced in: 9.17 • x-nullable: true
space	space	The storage space related properties of the LUN.
status	status	Status information about the LUN.
uuid	string	The unique identifier of the LUN. The UUID is generated by ONTAP when the LUN is created. • example: 1cd8a442-86d1-11e0-ae1c-123478563412 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
vvol	vvol	A VMware virtual volume (vVol) binding is an association between a LUN of class `protocol_endpoint` and a LUN of class `vvol`. Class `protocol_endpoint` LUNs are mapped to igroups and granted access using the same configuration as class `regular` LUNs. When a class `vvol` LUN is bound to a mapped class `protocol_endpoint` LUN, VMware can access the class `vvol` LUN through the class `protocol_endpoint` LUN mapping. See DELETE /protocols/san/vvol-bindings to learn more about deleting vVol bindings. There is an added computational cost to retrieving property values for `vvol`. They are not populated for a GET request unless explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage LUN attributes

Storage luns lun.uuid attributes endpoint overview

Overview

LUN attributes are caller-defined name/value pairs optionally stored with a LUN. Attributes are available to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

The LUN attributes REST API allows you to create, update, delete, and discover attributes for a LUN. The LUN REST API also allows you to set attributes when a LUN is first created.

Examples

Retrieving all attributes from a LUN

This example uses the LUN attribute REST API endpoint with the `fields` query parameter to request the names and values.

```
# The API:
GET /api/storage/luns/{lun.uuid}/attributes

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes?fields=*' -H 'Accept: application/hal+json'

# The response:
{
"records": [
  {
    "name": "name1",
    "value": "value1",
    "_links": {
      "self": {
        "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name1"
      }
    }
  },
  {
    "name": "name2",
    "value": "value2",
    "_links": {
      "self": {
        "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes"
  }
}
}
```

This example uses the LUN REST endpoint with the `fields` query parameter to request the attributes properties.

```
# The API:
GET /api/storage/luns/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90?fields=attributes' -H 'Accept: application/hal+json'

# The response:
{
"uuid": "4bc204df-ecd8-4f35-8207-d0ccb4db3a90",
"name": "/vol/vol1/lun1",
"attributes": [
  {
    "name": "name1",
    "value": "name1",
    "_links": {
      "self": {
        "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name1"
      }
    }
  },
  {
    "name": "name2",
    "value": "value2",
    "_links": {
      "self": {
        "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name2"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-d0ccb4db3a90"
  }
}
}
```

Adding an attribute to a LUN

```
# The API:
POST /api/storage/luns/{lun.uuid}/attributes

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes?return_records=true' -H 'Accept:
application/hal+json' -d '{ "name": "name1", "value": "value1" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "name": "name1",
    "value": "value1",
    "_links": {
      "self": {
        "href": "/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name1"
      }
    }
  }
]
}
```

Modifying an attribute value for a LUN

```
# The API
PATCH /api/storage/luns/{lun.uuid}/attributes/{name}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/luns/4bc204df-ecd8-4f35-8207-
d0ccb4db3a90/attributes/name1' -H 'Accept: application/hal+json' -d '{
"value": "newValue" }'
```

Deleting an attribute from a LUN

```
# The API:
DELETE /api/storage/luns/{lun.uuid}/attributes/{name}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/storage/luns/4bc204df-ecd8-4f35-
8207-d0ccb4db3a90/attributes/name1' -H 'Accept: application/hal+json'
```

Retrieve LUN attributes

GET `/storage/luns/{lun.uuid}/attributes`

Introduced In: 9.10

Retrieves LUN attributes.

Learn more

- DOC /storage/luns/{lun.uuid}/attributes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
value	string	query	False	Filter by value • maxLength: 4091 • minLength: 1
name	string	query	False	Filter by name • maxLength: 4091 • minLength: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	The number of records in the response.
records	array[lun_attribute]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "lun": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "name1",
      "value": "value1"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

lun

The LUN for which the attribute is set.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the LUN.

lun_attribute

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Name	Type	Description
_links	_links	
lun	lun	The LUN for which the attribute is set.
name	string	The attribute name. Required in POST.
value	string	The attribute value. Required in POST; valid in PATCH.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add an attribute to a LUN

POST `/storage/luns/{lun.uuid}/attributes`

Introduced In: 9.10

Adds an attribute to a LUN.

Required properties

- `name` - The name of the attribute to add.
- `value` - The value of the attribute to add.

Learn more

- DOC /storage/luns/{lun.uuid}/attributes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
lun	lun	The LUN for which the attribute is set.
name	string	The attribute name. Required in POST.

Name	Type	Description
value	string	The attribute value. Required in POST; valid in PATCH.

Example request

```
{
  "lun": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "name1",
  "value": "value1"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN was not found.
5374928	An incomplete attribute name/value pair was supplied.
5374929	The combined sizes of an attribute name and value are too large.
5374930	The attribute already exists for the LUN.
5375060	The copy start operation failed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

lun

The LUN for which the attribute is set.

Name	Type	Description
uuid	string	The unique identifier of the LUN.

lun_attribute

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Name	Type	Description
lun	lun	The LUN for which the attribute is set.
name	string	The attribute name. Required in POST.
value	string	The attribute value. Required in POST; valid in PATCH.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a LUN attribute

DELETE `/storage/luns/{lun.uuid}/attributes/{name}`

Introduced In: 9.10

Deletes a LUN attribute.

Learn more

- DOC /storage/luns/{lun.uuid}/attributes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	
name	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN was not found.
5374931	The specified attribute was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a LUN attribute

GET `/storage/luns/{lun.uuid}/attributes/{name}`

Introduced In: 9.10

Retrieves a LUN attribute.

Learn more

- DOC /storage/luns/{lun.uuid}/attributes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
name	string	path	True	The name of the attribute.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
lun	lun	The LUN for which the attribute is set.
name	string	The attribute name. Required in POST.
value	string	The attribute value. Required in POST; valid in PATCH.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "lun": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "name1",
  "value": "value1"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN was not found.
5374931	The specified attribute was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

lun

The LUN for which the attribute is set.

Name	Type	Description
_links	_links	
uuid	string	The unique identifier of the LUN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a LUN attribute value

PATCH `/storage/luns/{lun.uuid}/attributes/{name}`

Introduced In: 9.10

Updates a LUN attribute value.

Learn more

- DOC /storage/luns/{lun.uuid}/attributes

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
name	string	path	True	The name of the attribute.

Request Body

Name	Type	Description
lun	lun	The LUN for which the attribute is set.
value	string	The attribute value. Required in POST; valid in PATCH.

Example request

```
{
  "lun": {
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "value": "value1"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5374875	The specified LUN was not found.
5374929	The combined sizes of an attribute name and value are too large.
5374931	The specified attribute was not found.
5375060	The move start operation failed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

lun

The LUN for which the attribute is set.

Name	Type	Description
uuid	string	The unique identifier of the LUN.

lun_attribute

A name/value pair optionally stored with the LUN. Attributes are available to callers to persist small amounts of application-specific metadata. They are in no way interpreted by ONTAP.

Attribute names and values must be at least one byte and no more than 4091 bytes in length. The sum of the name and value lengths must be no more than 4092 bytes.

Name	Type	Description
lun	lun	The LUN for which the attribute is set.
value	string	The attribute value. Required in POST; valid in PATCH.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for a LUN

GET `/storage/luns/{lun.uuid}/metrics`

Introduced In: 9.14

Retrieves historical space and performance metrics for a LUN.

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other

Name	Type	In	Required	Description
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
uuid	string	query	False	Filter by uuid
status	string	query	False	Filter by status
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.
uuid	string	The unique identifier of the LUN.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for a LUN for a specific time

GET `/storage/luns/{lun.uuid}/metrics/{timestamp}`

Introduced In: 9.14

Retrieves historical space and performance metrics for a LUN for a specific time.

Parameters

Name	Type	In	Required	Description
lun.uuid	string	path	True	The unique identifier of the LUN.
timestamp	string	path	True	The timestamp of the space and performance data. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

Name	Type	Description
uuid	string	The unique identifier of the LUN.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8585947	No metrics are available for the requested object.

Error Code	Description
8586225	An unexpected error occurred retrieving metrics for the requested object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

SVM

SVM overview

Overview

Storage Virtual Machine (SVM) APIs enable you to manage SVMs and their attributes, including the configuration of the CIFS and NFS protocols, export policies, name mappings between CIFS and NFS users, and network services.

SVMs contain data volumes and one or more network interfaces through which they serve data to the clients. SVMs securely isolate the shared virtualized data storage and network, and each SVM appears as a single dedicated server to the clients. Each SVM has a separate administrator authentication domain, and each SVM can be managed independently by its SVM administrator.

In a cluster, SVMs facilitate data access. A cluster must have at least one SVM to serve data. Multiple SVMs can coexist in a single cluster without being bound to any particular node in the cluster. However, they are bound to the physical cluster on which they exist.

SVMs with volumes can contain files and LUNs. They provide file-level data access by using NFS and CIFS protocols for the NAS clients, and block-level data access by using iSCSI and Fibre Channel (FC) (FCoE included) for SAN hosts. The volumes within each NAS SVM are related to each other through junctions and they are mounted on junction paths. These junctions present the file system in each volume. The root volume of the SVM resides at the top level of the namespace hierarchy; additional volumes are mounted to the SVM root volume to extend the namespace. As volumes are created for the SVM, the root volume of the SVM contains junction paths.

The ONTAP REST APIs only expose data SVMs as an SVM. The information and configuration associated with the cluster and nodes are exposed from REST, but the cluster and nodes are not treated as if they are a type of SVM from REST APIs. Some APIs that expose both cluster-owned resources and SVM-owned resources from the same endpoint only return and support the "svm" sub-object for the resources that are within a data SVM. In those endpoints, the resources that are not in a data SVM do not return the "svm" sub-object. Generally, such endpoints have a "scope" attribute that returns either "svm" or "cluster" to identify the resource as either a cluster-level resource or one that is completely contained in a data SVM.

Manage SVM migration

SVM migrations endpoint overview

Overview

You can use this API to migrate an SVM from a source cluster to a destination cluster. During the migration, you can pause, resume, or abort the operation, and retrieve the migration status and transfer status of volumes in the SVM.
The migrations APIs are only accessible from the destination cluster.

Precondition

The cluster peering relationship should be created between the source and destination clusters prior to using this API.

SVM migration APIs

The following APIs are used to manage SVM migration:

- POST /api/svm/migrations
- PATCH /api/svm/migrations/{uuid}
- GET /api/svm/migrations/
- GET /api/svm/migrations/{uuid}
- GET /api/svm/migrations/{svm_migration.uuid}/volumes
- GET /api/svm/migrations/{svm_migration.uuid}/volumes/{volume.uuid}
- DELETE /api/svm/migrations/{uuid}

Important notes

The migration of temperature-sensitive storage efficiency (TSSE) volumes from AFF to FAS systems has a known limitation. The migration preserves the TSSE savings and after migration completes, the volume will not receive any further TSSE savings for the new data written on the volume.

Starting a migration

To start a migration operation, issue a POST request to /svm/migrations. Parameters are provided in the body of the POST request to specify the source cluster and the source SVM.

Monitoring the status of the SVM migration

You can use GET /svm/migrations to retrieve the status of the SVM migration and GET /svm/migrations/{svm_migration.uuid}/volumes to retrieve the transfer status of the volumes in the SVM migration.

Possible errors before starting the migration

Configurations in the POST /svm/migrations request are validated before the SVM migration starts. If an invalid configuration is found or the migration pre-checks fail, an HTTP error code in the 4xx range is returned. No SVM migration operation is started.

Polling the migration operation

After a successful POST /svm/migrations request is issued, an HTTP error code of 202 is returned along with a migration UUID and link in the body of the response. The SVM migration continues asynchronously and is monitored using the migration UUID and the GET /svm/migrations/{uuid} API.

Errors during the migration operation

If a failure occurs during the SVM migration, the GET /svm/migrations response provides details of the error along with any error code fields.

Pausing the migration operation

You can use PATCH /svm/migrations/{uuid} with the action "pause" to pause the SVM migration to update the SVM configuration on the source SVM.

Resuming the migration operation

You can use PATCH /svm/migrations{uuid} with the action "resume" to resume the SVM migration from a paused state.
You can modify the throttle value when you resume the SVM migration. To set the throttle value to unlimited, specify the throttle value as 0.

Aborting the migration operation

You can use DELETE /svm/migrations/{uuid} to delete the SVM on the destination cluster if the SVM migration has failed or is paused.
Use the DELETE /svm/migrations/{uuid} request to remove the SVM on the source cluster; this might be used when communication between the source and destination cluster is reduced.

Retrieving the migration status

You can use GET /svm/migrations/{uuid} to retrieve the current status of your migration.

Retrieving the volume transfer status

You can use GET /svm/migrations/{svm_migration.uuid}/volumes to retrieve the current transfer status of all volumes in the migrating SVM.

Retrieving the volume transfer status of a specific volume

You can use GET /svm/migrations/{svm_migrations.uuid}/volumes/{volume.uuid} to retrieve the transfer status of a specific volume in the migrating SVM.

Examples

Starting a Migration

```
# API
/api/svm/migrations
```

POST body included from file

```
svm_migration_post_body.txt:
{
"source": {
  "svm": {
    "name": "vs1"
  },
  "cluster": {
    "name": "siteB"
  }
}
}
curl -X POST https://<mgmt-ip>/api/svm/migrations -H "Content-Type:
application+hal/json" -d "@svm_migration_post_body.txt"
```

Inline POST body

```
curl -X POST https://<mgmt-ip>/api/svm/migrations -H "Content-Type:
application+hal/json" -d '{"source": {"svm": {"name": "vs1"}, "cluster":
{"name": "siteB"}}}'
```

POST Response

```
Date: Wed, 25 Aug 2021 19:04:47 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/svm/migrations/517c5e74-05d7-11ec-a40f-005056bba9a5
Content-Length: 189
Content-Type: application/hal+json
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"job": {
  "uuid": "5184a3e1-05d7-11ec-a40f-005056bba9a5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5184a3e1-05d7-11ec-a40f-005056bba9a5"
    }
  }
}
}
```

Retrieving POST Job status

Use the link provided in the response to the POST request to fetch the status of the start operation

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/5184a3e1-05d7-11ec-a40f-
005056bba9a5
```

Response

```
Date: Wed, 25 Aug 2021 19:05:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 224
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"uuid": "5184a3e1-05d7-11ec-a40f-005056bba9a5",
"description": "POST /api/svm/migrations/517c5e74-05d7-11ec-a40f-
005056bba9a5",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2021-08-25T15:04:48-04:00",
"end_time": "2021-08-25T15:04:57-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/5184a3e1-05d7-11ec-a40f-005056bba9a5"
  }
}
}
```

Retrieving all migrations

The location header in the POST operation provides the uuid of the migrate operation that was started using POST. Also, you can list all the migrate operations using the collection GET.

Request

```
curl -X GET https://<mgmt-ip>/api/svm/migrations
```

Response

```
Date: Wed, 25 Aug 2021 19:05:11 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 170
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"records": [
  {
    "uuid": "517c5e74-05d7-11ec-a40f-005056bba9a5",
    "_links": {
      "self": {
        "href": "/api/svm/migrations/517c5e74-05d7-11ec-a40f-005056bba9a5"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/svm/migrations/"
  }
}
}
```

Retrieving a specific migration

Request

```
curl -X GET https://<mgmt-ip>/api/svm/migrations/517c5e74-05d7-11ec-a40f-
005056bba9a5
```

Response

```
Date: Wed, 25 Aug 2021 19:05:33 GMT
```

```
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 379
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"uuid": "517c5e74-05d7-11ec-a40f-005056bba9a5",
"state": "setup_configuration",
"start_time": "2021-08-25T15:04:49-04:00",
"current_operation": "start",
"source": {
  "svm": {
    "uuid": "424b6002-fb1a-11eb-9383-005056bbcf32",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/424b6002-fb1a-11eb-9383-005056bbcf32"
      }
    }
  },
  "cluster": {
    "uuid": "b54babec-fb14-11eb-9383-005056bbcf32",
    "name": "siteB",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b54babec-fb14-11eb-9383-005056bbcf32"
      }
    }
  }
},
"destination": {
  "ipspace": {
    "uuid": "f305cf0b-fb14-11eb-829d-005056bba9a5",
    "name": "Default"
  }
},
"auto_cutover": false,
"auto_source_cleanup": false,
"throttle": 0,
"_links": {
  "self": {
    "href": "/api/svm/migrations/517c5e74-05d7-11ec-a40f-005056bba9a5"
```

```
  }
}
}
```

Pausing a migration

To pause the migration use the PATCH request on the migration UUID.

Request

```
curl -X PATCH https://<mgmt-ip>/api/svm/migrations/517c5e74-05d7-11ec-
a40f-005056bba9a5?action=pause
```

Response

```
Date: Wed, 25 Aug 2021 19:06:11 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"job": {
  "uuid": "82dea7c7-05d7-11ec-a40f-005056bba9a5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/82dea7c7-05d7-11ec-a40f-005056bba9a5"
    }
  }
}
}
```

Monitoring PATCH job status

Use the link provided in the response of the PATCH request to fetch the information of the patch job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/82dea7c7-05d7-11ec-a40f-
005056bba9a5
```

Response

```
Date: Wed, 25 Aug 2021 21:40:06 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 222
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"uuid": "82dea7c7-05d7-11ec-a40f-005056bba9a5",
"description": "PATCH /api/svm/migrations/517c5e74-05d7-11ec-a40f-
005056bba9a5",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2021-08-25T15:06:11-04:00",
"end_time": "2021-08-25T15:06:11-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/82dea7c7-05d7-11ec-a40f-005056bba9a5"
  }
}
}
```

Aborting a migration

To abort the migration use the DELETE request on the migration UUID.

Request

```
curl -X DELETE https://<mgmt-ip>/api/svm/migrations/517c5e74-05d7-11ec-
a40f-005056bba9a5
```

Response

```
Date: Wed, 25 Aug 2021 22:57:23 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"job": {
  "uuid": "cf870f19-05f7-11ec-a40f-005056bba9a5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/cf870f19-05f7-11ec-a40f-005056bba9a5"
    }
  }
}
}
```

Monitoring DELETE job status

Use the link provided in the response of the PATCH request to fetch the information of the patch job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/cf870f19-05f7-11ec-a40f-
005056bba9a5
```

Response

```
Date: Wed, 25 Aug 2021 23:05:47 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 228
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
{
"uuid": "cf870f19-05f7-11ec-a40f-005056bba9a5",
"description": "DELETE /api/svm/migrations/517c5e74-05d7-11ec-a40f-
005056bba9a5",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2021-08-25T18:57:23-04:00",
"end_time": "2021-08-25T18:57:24-04:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/cf870f19-05f7-11ec-a40f-005056bba9a5"
  }
}
}
```

Retrieve the SVM migration status

GET `/svm/migrations`

Introduced In: 9.10

Retrieves the SVM migration status.

Related ONTAP commands

- `vserver migrate show`

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
throttle	integer	query	False	Filter by throttle • Introduced in: 9.12
auto_source_cleanup	boolean	query	False	Filter by auto_source_cleanup
source.svm.name	string	query	False	Filter by source.svm.name
source.svm.uuid	string	query	False	Filter by source.svm.uuid
source.cluster.name	string	query	False	Filter by source.cluster.name
source.cluster.uuid	string	query	False	Filter by source.cluster.uuid
destination.ipspace.name	string	query	False	Filter by destination.ipspace.name
destination.ipspace.uuid	string	query	False	Filter by destination.ipspace.uuid
messages.code	string	query	False	Filter by messages.code
messages.message	string	query	False	Filter by messages.message
last_operation	string	query	False	Filter by last_operation
restart_count	integer	query	False	Filter by restart_count
current_operation	string	query	False	Filter by current_operation
last_failed_state	string	query	False	Filter by last_failed_state

Name	Type	In	Required	Description
state	string	query	False	Filter by state
point_of_no_return	boolean	query	False	Filter by point_of_no_return
post_ponr_retry_count	integer	query	False	Filter by post_ponr_retry_count • Introduced in: 9.17
auto_cutover	boolean	query	False	Filter by auto_cutover
time_metrics.start_time	string	query	False	Filter by time_metrics.start_time
time_metrics.end_time	string	query	False	Filter by time_metrics.end_time
time_metrics.last_post_ponr_retry_time	string	query	False	Filter by time_metrics.last_post_ponr_retry_time • Introduced in: 9.17
time_metrics.cutover_complete_time	string	query	False	Filter by time_metrics.cutover_complete_time
time_metrics.last_resume_time	string	query	False	Filter by time_metrics.last_resume_time
time_metrics.last_pause_time	string	query	False	Filter by time_metrics.last_pause_time
time_metrics.cutover_trigger_time	string	query	False	Filter by time_metrics.cutover_trigger_time

Name	Type	In	Required	Description
time_metrics.cutover_start_time	string	query	False	Filter by time_metrics.cutover_start_time
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of records
records	array[svm_migration]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "check_only": true,
      "current_operation": "string",
      "destination": {
        "ipspace": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "Default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "last_failed_state": "string",
      "last_operation": "string",
      "messages": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "post_ponr_retry_count": 0,
      "restart_count": 0,
      "source": {
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "state": "string",
      "throttle": 0,
      "time_metrics": {
        "cutover_complete_time": "2020-12-02 22:30:19 -0500",
        "cutover_start_time": "2020-12-02 21:20:19 -0500",
        "cutover_trigger_time": "2020-12-02 22:15:19 -0500",
        "end_time": "2020-12-02 22:36:19 -0500",
        "last_pause_time": "2020-12-02 21:50:19 -0500",
        "last_post_ponr_retry_time": "2020-12-02 22:30:19 -0500",
        "last_resume_time": "2020-12-02 21:54:19 -0500",
        "start_time": "2020-12-02 21:36:19 -0500"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

aggregate

Aggregate to use for volume creation.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
uuid	string	

volume

Property indicating the source volume.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

volume_aggregate_pairs

Volume-aggregate pair information.

Name	Type	Description
aggregate	aggregate	Aggregate to use for volume creation.
volume	volume	Property indicating the source volume.

volume_placement

Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

Name	Type	Description
aggregates	array[aggregates]	Optional property used to specify the list of desired aggregates to use for volume creation in the destination.
volume_aggregate_pairs	array[volume_aggregate_pairs]	Optional property used to specify the list of desired volume-aggregate pairs in the destination.

destination

Destination cluster details for the SVM migration.

Name	Type	Description
ipspace	ipspace	Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface on the source SVM.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port to use for IP interface placement on the destination SVM.

Name	Type	Description
_links	_links	
name	string	
node	node	
uuid	string	

ip_interfaces

IP interface and network port pair information.

Name	Type	Description
interface	interface	Network interface on the source SVM.
port	port	Port to use for IP interface placement on the destination SVM.

svm_migration_ip_interface_placement

Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.

Name	Type	Description
ip_interfaces	array[ip_interfaces]	List of source SVM's IP interface and port pairs on the destination for migrating the source SVM's IP interfaces.

messages

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

cluster

Source cluster for the SVM migration.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

Source SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

source

Source cluster details for the SVM migration.

Name	Type	Description
cluster	cluster	Source cluster for the SVM migration.
svm	svm	Source SVM

time_metrics

Various time metrics details

Name	Type	Description
cutover_complete_time	string	Cutover end time

Name	Type	Description
cutover_start_time	string	Cutover start time
cutover_trigger_time	string	Cutover trigger time
end_time	string	Migration end time
last_pause_time	string	Last migration pause time
last_post_ponr_retry_time	string	Last post point of no return retry time
last_resume_time	string	Last migration resume time
start_time	string	Migration start time

svm_migration

Provides information on SVM migration, default and user specified configurations, the state of the migration, and volume transfer metrics.

Name	Type	Description
auto_cutover	boolean	Optional property that when set to true automatically performs cutover when the migration state reaches "ready for cutover".
auto_source_cleanup	boolean	Optional property that when set to true automatically cleans up the SVM on the source cluster after the migration cutover.
current_operation	string	
destination	destination	Destination cluster details for the SVM migration.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	
messages	array[messages]	Errors and warnings returned/displayed during migration.

Name	Type	Description
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an SVM migration operation

POST `/svm/migrations`

Introduced In: 9.10

Creates an SVM migration operation. This API must be executed on the destination cluster. This API creates an SVM on the destination cluster and preserves the SVM's identity specified in the source cluster. Optionally, you can specify the aggregate list for creating the volumes, and IPspace. You can perform pre-checks to verify if SVM migration is possible, by setting the "check-only" option to "true". By default the values for auto-source-cleanup and auto-cutover is true.

Required properties

- `source.svm.name` or `source.svm.uuid` - Source SVM name or source SVM UUID.
- `source.cluster.name` or `source.cluster.uuid` - Source cluster name or source cluster UUID

Optional properties

- `destination.ipspace.name` or `destination.ipspace.uuid` - Destination IP Space name or UUID where the SVM will be migrated to.
- `destination.volume_placement.aggregates` - List of aggregates where the migrating volumes should go on the destination.
- `destination.volume_placement.volume_aggregate_pairs` - List of volume aggregate pairs indicating where the migrating volumes should go on the destination.
- `ip_interface_placement` - List of source SVM's IP interface and port pairs on the destination for migrating the SVM's IP interfaces.
- `auto_cutover` - Option to specify whether to perform cutover automatically. Default is true.
- `auto_source_cleanup` - Option to specify whether to perform source cleanup automatically. Default is true.
- `check_only` - Option to perform all the prechecks for migrate without actually starting the migrate. Default is false.
- `throttle` - Option to specify a throttle value in KB/s. Defaults to unlimited.

Related ONTAP commands

- `vserver migrate start`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
auto_cutover	boolean	Optional property that when set to true automatically performs cutover when the migration state reaches "ready for cutover".
auto_source_cleanup	boolean	Optional property that when set to true automatically cleans up the SVM on the source cluster after the migration cutover.
check_only	boolean	Optional property that when set to true performs only migration pre-checks not the actual migration.
current_operation	string	
destination	destination	Destination cluster details for the SVM migration.
ip_interface_placement	svm_migration_ip_interface_placement	Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	
messages	array[messages]	Errors and warnings returned/displayed during migration.
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.

Name	Type	Description
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

Example request


```
{
  "current_operation": "string",
  "destination": {
    "ipspace": {
      "name": "Default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "volume_placement": {
      "aggregates": [
        {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "volume_aggregate_pairs": [
        {
          "aggregate": {
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "volume": {
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ]
    }
  },
  "ip_interface_placement": {
    "ip_interfaces": [
      {
        "interface": {
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "port": {
          "name": "e1b",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
```

```
  },
  "last_failed_state": "string",
  "last_operation": "string",
  "messages": [
    {
      "code": "string",
      "message": "string"
    }
  ],
  "post_ponr_retry_count": 0,
  "restart_count": 0,
  "source": {
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "state": "string",
  "throttle": 0,
  "time_metrics": {
    "cutover_complete_time": "2020-12-02 22:30:19 -0500",
    "cutover_start_time": "2020-12-02 21:20:19 -0500",
    "cutover_trigger_time": "2020-12-02 22:15:19 -0500",
    "end_time": "2020-12-02 22:36:19 -0500",
    "last_pause_time": "2020-12-02 21:50:19 -0500",
    "last_post_ponr_retry_time": "2020-12-02 22:30:19 -0500",
    "last_resume_time": "2020-12-02 21:54:19 -0500",
    "start_time": "2020-12-02 21:36:19 -0500"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Name	Type	Description
num_records	integer	Number of records
records	array[svm_migration]	

Example response


```
{
  "job": {
    "uuid": "string"
  },
  "num_records": 1,
  "records": [
    {
      "current_operation": "string",
      "destination": {
        "ipspace": {
          "name": "Default",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "volume_placement": {
          "aggregates": [
            {
              "name": "aggr1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          ],
          "volume_aggregate_pairs": [
            {
              "aggregate": {
                "name": "aggr1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              },
              "volume": {
                "name": "volume1",
                "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
              }
            }
          ]
        }
      },
      "ip_interface_placement": {
        "ip_interfaces": [
          {
            "interface": {
              "name": "lif1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "port": {
              "name": "e1b",
              "node": {
```

```
                "name": "node1"
              },
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ]
      },
      "last_failed_state": "string",
      "last_operation": "string",
      "messages": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "post_ponr_retry_count": 0,
      "restart_count": 0,
      "source": {
        "cluster": {
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "state": "string",
      "throttle": 0,
      "time_metrics": {
        "cutover_complete_time": "2020-12-02 22:30:19 -0500",
        "cutover_start_time": "2020-12-02 21:20:19 -0500",
        "cutover_trigger_time": "2020-12-02 22:15:19 -0500",
        "end_time": "2020-12-02 22:36:19 -0500",
        "last_pause_time": "2020-12-02 21:50:19 -0500",
        "last_post_ponr_retry_time": "2020-12-02 22:30:19 -0500",
        "last_resume_time": "2020-12-02 21:54:19 -0500",
        "start_time": "2020-12-02 21:36:19 -0500"
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262245	The value provided is invalid.
13172746	SVM migration cannot be started. This is a generic code, see the response message for details.
13173748	Migrate request cannot contain both \"aggregates\" and \"volume_aggregate_pairs\" within the \"volume_placement\" object.
13173758	The property \"{property}\" is not supported for this operation.
13173759	Migrate operation failed. To use LIF placement specify either the port UUID, or both the port name and the port node name.
13173760	Migrate operation failed. LIF placement requires either the port node name or the port UUID to be specified if the port name is specified.
13173761	Migrate operation failed. LIF placement requires either the port name or the port UUID to be specified if the port node name is specified.
13173762	Migrate operation failed. To use LIF placement specify at least one of the following: IP interface UUID, IP interface name, or IP interface IP.
13173764	Migrate operation failed because LIF placement is not supported on the destination cluster. Both clusters must have an effective cluster version of 9.12.1 or later.
13173765	Migrate operation failed. Unable to determine if LIF placement is supported. Reason: \"{Reason}\"

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

aggregate

Aggregate to use for volume creation.

Name	Type	Description
name	string	
uuid	string	

volume

Property indicating the source volume.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

volume_aggregate_pairs

Volume-aggregate pair information.

Name	Type	Description
aggregate	aggregate	Aggregate to use for volume creation.
volume	volume	Property indicating the source volume.

volume_placement

Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

Name	Type	Description
aggregates	array[aggregates]	Optional property used to specify the list of desired aggregates to use for volume creation in the destination.
volume_aggregate_pairs	array[volume_aggregate_pairs]	Optional property used to specify the list of desired volume-aggregate pairs in the destination.

destination

Destination cluster details for the SVM migration.

Name	Type	Description
ipspace	ipspace	Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.
volume_placement	volume_placement	Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

ip

IP information

interface

Network interface on the source SVM.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port to use for IP interface placement on the destination SVM.

Name	Type	Description
name	string	

Name	Type	Description
node	node	
uuid	string	

ip_interfaces

IP interface and network port pair information.

Name	Type	Description
interface	interface	Network interface on the source SVM.
port	port	Port to use for IP interface placement on the destination SVM.

svm_migration_ip_interface_placement

Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.

Name	Type	Description
ip_interfaces	array[ip_interfaces]	List of source SVM's IP interface and port pairs on the destination for migrating the source SVM's IP interfaces.

messages

Name	Type	Description
code	string	Argument code
message	string	Message argument

cluster

Source cluster for the SVM migration.

Name	Type	Description
name	string	
uuid	string	

svm

Source SVM

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

source

Source cluster details for the SVM migration.

Name	Type	Description
cluster	cluster	Source cluster for the SVM migration.
svm	svm	Source SVM

time_metrics

Various time metrics details

Name	Type	Description
cutover_complete_time	string	Cutover end time
cutover_start_time	string	Cutover start time
cutover_trigger_time	string	Cutover trigger time
end_time	string	Migration end time
last_pause_time	string	Last migration pause time
last_post_ponr_retry_time	string	Last post point of no return retry time
last_resume_time	string	Last migration resume time
start_time	string	Migration start time

svm_migration

Provides information on SVM migration, default and user specified configurations, the state of the

migration, and volume transfer metrics.

Name	Type	Description
auto_cutover	boolean	Optional property that when set to true automatically performs cutover when the migration state reaches "ready for cutover".
auto_source_cleanup	boolean	Optional property that when set to true automatically cleans up the SVM on the source cluster after the migration cutover.
check_only	boolean	Optional property that when set to true performs only migration pre-checks not the actual migration.
current_operation	string	
destination	destination	Destination cluster details for the SVM migration.
ip_interface_placement	svm_migration_ip_interface_placement	Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	
messages	array[messages]	Errors and warnings returned/displayed during migration.
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.

Name	Type	Description
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the transfer status of volumes in an SVM

GET `/svm/migrations/{svm_migration.uuid}/volumes`

Introduced In: 9.10

Retrieves the transfer status of the volumes in the SVM.

Related ONTAP commands

- `vserver migrate show-volume`

Parameters

Name	Type	In	Required	Description
svm_migration.uuid	string	path	True	Migration UUID
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[svm_migration_volume]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "errors": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "transfer_state": "string",
      "volume": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

errors

Name	Type	Description
code	string	Argument code
message	string	Message argument

_links

Name	Type	Description
self	href	

node

Node in the destination cluster where the volume is hosted

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM information

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume information in the destination cluster

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

svm_migration_volume

Volume transfer information

Name	Type	Description
_links	self_link	
errors	array[errors]	List of transfer errors
healthy	boolean	Indicates whether the volume transfer relationship is healthy.
node	node	Node in the destination cluster where the volume is hosted

Name	Type	Description
svm	svm	SVM information
transfer_state	string	Status of the transfer.
volume	volume	Volume information in the destination cluster

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the volume transfer status for a volume

GET `/svm/migrations/{svm_migration.uuid}/volumes/{volume.uuid}`

Introduced In: 9.10

Retrieves the volume transfer status of the specified volume.uuid.

Related ONTAP commands

- `vserver migrate show-volume`

Parameters

Name	Type	In	Required	Description
svm_migration.uuid	string	path	True	Migration UUID

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
transfer_state	string	query	False	Filter by transfer_state
errors.code	string	query	False	Filter by errors.code
errors.message	string	query	False	Filter by errors.message
volume.name	string	query	False	Filter by volume.name
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
healthy	boolean	query	False	Filter by healthy
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
errors	array[errors]	List of transfer errors
healthy	boolean	Indicates whether the volume transfer relationship is healthy.
node	node	Node in the destination cluster where the volume is hosted
svm	svm	SVM information
transfer_state	string	Status of the transfer.
volume	volume	Volume information in the destination cluster

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "errors": [
    {
      "code": "string",
      "message": "string"
    }
  ],
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "transfer_state": "string",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

errors

Name	Type	Description
code	string	Argument code
message	string	Message argument

_links

Name	Type	Description
self	href	

node

Node in the destination cluster where the volume is hosted

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM information

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume information in the destination cluster

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Delete SVM migrations

DELETE `/svm/migrations/{uuid}`

Introduced In: 9.10

Deletes the SVM migration.

Related ONTAP commands

- `vserver migrate abort`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SVM migration UUID.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed
13173738	REST API DELETE method \"/api/svm/migrations\" is only supported on the destination cluster. Issue the REST API DELETE request to the destination cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the migration status for an SVM

GET `/svm/migrations/{uuid}`

Introduced In: 9.10

Retrieves the migration status of an individual SVM.

Important notes

- The "migrations" object includes a large set of fields and can be expensive to retrieve.
- REST APIs only expose a data SVM as an SVM.
- There are subsystem specific errors that can be returned from this endpoint. If a subsystem specific error is returned and this is the first migrate operation attempt, it is embedded in one of the following errors. If a subsystem specific error is returned and this is not the first migrate operation attempt, the subsystem specific error is returned directly.

Example

Retrieving an individual SVM migration status.

```
  GET "/api/svm/migrations/a14ae39f-8d85-11e9-b4a7-
00505682dc8b/svms/f16f0935-5281-11e8-b94d-005056b46485"
```

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Migration UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
auto_cutover	boolean	Optional property that when set to true automatically performs cutover when the migration state reaches "ready for cutover".
auto_source_cleanup	boolean	Optional property that when set to true automatically cleans up the SVM on the source cluster after the migration cutover.
current_operation	string	

Name	Type	Description
destination	destination	Destination cluster details for the SVM migration.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	
messages	array[messages]	Errors and warnings returned/displayed during migration.
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

Example response


```
{
  "check_only": true,
  "current_operation": "string",
  "destination": {
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "Default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "last_failed_state": "string",
  "last_operation": "string",
  "messages": [
    {
      "code": "string",
      "message": "string"
    }
  ],
  "post_ponr_retry_count": 0,
  "restart_count": 0,
  "source": {
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
```

```
  "state": "string",
  "throttle": 0,
  "time_metrics": {
    "cutover_complete_time": "2020-12-02 22:30:19 -0500",
    "cutover_start_time": "2020-12-02 21:20:19 -0500",
    "cutover_trigger_time": "2020-12-02 22:15:19 -0500",
    "end_time": "2020-12-02 22:36:19 -0500",
    "last_pause_time": "2020-12-02 21:50:19 -0500",
    "last_post_ponr_retry_time": "2020-12-02 22:30:19 -0500",
    "last_resume_time": "2020-12-02 21:54:19 -0500",
    "start_time": "2020-12-02 21:36:19 -0500"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed
13173739	Migrate pause operation failed. Retry pause operation using REST API PATCH method \"/api/svm/migrations/<migration_uuid>?action=pause\\". Reason: {Reason}</migration_uuid>
13173740	Migrate abort operation failed. Retry abort operation by using REST API DELETE method \"/api/svm/migrations/<migration_uuid>\\". Reason: {Reason}</migration_uuid>
13173741	Migrate failed. Retry the migrate by running the resume operation using REST API PATCH method \"/api/svm/migrations/<migration_uuid>?action=resume\\". Reason: {Reason}</migration_uuid>
13173742	Migrate operation status: {Reason}.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

aggregate

Aggregate to use for volume creation.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

volume

Property indicating the source volume.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

volume_aggregate_pairs

Volume-aggregate pair information.

Name	Type	Description
aggregate	aggregate	Aggregate to use for volume creation.
volume	volume	Property indicating the source volume.

volume_placement

Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

Name	Type	Description
aggregates	array[aggregates]	Optional property used to specify the list of desired aggregates to use for volume creation in the destination.
volume_aggregate_pairs	array[volume_aggregate_pairs]	Optional property used to specify the list of desired volume-aggregate pairs in the destination.

destination

Destination cluster details for the SVM migration.

Name	Type	Description
ipspace	ipspace	Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Network interface on the source SVM.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port to use for IP interface placement on the destination SVM.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
node	node	
uuid	string	

ip_interfaces

IP interface and network port pair information.

Name	Type	Description
interface	interface	Network interface on the source SVM.
port	port	Port to use for IP interface placement on the destination SVM.

svm_migration_ip_interface_placement

Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.

Name	Type	Description
ip_interfaces	array[ip_interfaces]	List of source SVM's IP interface and port pairs on the destination for migrating the source SVM's IP interfaces.

messages

Name	Type	Description
code	string	Argument code
message	string	Message argument

cluster

Source cluster for the SVM migration.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

Source SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

source

Source cluster details for the SVM migration.

Name	Type	Description
cluster	cluster	Source cluster for the SVM migration.
svm	svm	Source SVM

time_metrics

Various time metrics details

Name	Type	Description
cutover_complete_time	string	Cutover end time
cutover_start_time	string	Cutover start time
cutover_trigger_time	string	Cutover trigger time
end_time	string	Migration end time
last_pause_time	string	Last migration pause time
last_post_ponr_retry_time	string	Last post point of no return retry time
last_resume_time	string	Last migration resume time
start_time	string	Migration start time

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update actions performed during an SVM migration

PATCH `/svm/migrations/{uuid}`

Introduced In: 9.10

Actions that can be performed during an SVM migration.

Related ONTAP commands

- `vserver migrate pause`
- `vserver migrate resume`
- `vserver migrate cutover`
- `vserver migrate source-cleanup`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SVM migration UUID

Name	Type	In	Required	Description
action	string	query	False	The pause action pauses the SVM migration. This action stops data transfer and configuration replication. This operation must be performed on the destination cluster. The resume action resumes an SVM migration from a paused or failed state. If the SVM migration is in a cleanup_failed state, volume placement is ignored. This operation must be performed on the destination cluster. The cutover action triggers the cutover of an SVM from the source cluster to the destination cluster. The source_clean up action performs a clean up of the SVM on the source cluster. • enum: ["pause", "resume", "cutover", "source_cleanup "]
auto_cutover	boolean	query	False	Optional property that when set to true automatically performs cutover when the migration state reaches "ready for cutover". • Default value: 1

Name	Type	In	Required	Description
auto_source_cleanup	boolean	query	False	Optional property that when set to true automatically cleans up the SVM on the source cluster after the migration cutover. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
current_operation	string	

Name	Type	Description
destination	destination	Destination cluster details for the SVM migration.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	
messages	array[messages]	Errors and warnings returned/displayed during migration.
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

Example request

```
{
  "auto_cutover": true,
  "auto_source_cleanup": true,
  "check_only": true,
  "current_operation": "string",
  "destination": {
    "volume_placement": {
      "volume_aggregate_pairs": [
        {
          "aggregate": {
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "volume": {
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ]
    }
  },
  "last_failed_state": "string",
  "last_operation": "string",
  "messages": [
    {
      "code": "string",
      "message": "string"
    }
  ],
  "post_ponr_retry_count": 0,
  "restart_count": 0,
  "state": "string",
  "throttle": 0,
  "time_metrics": {
    "cutover_complete_time": "2020-12-02 22:30:19 -0500",
    "cutover_start_time": "2020-12-02 21:20:19 -0500",
    "cutover_trigger_time": "2020-12-02 22:15:19 -0500",
    "end_time": "2020-12-02 22:36:19 -0500",
    "last_pause_time": "2020-12-02 21:50:19 -0500",
    "last_post_ponr_retry_time": "2020-12-02 22:30:19 -0500",
    "last_resume_time": "2020-12-02 21:54:19 -0500",
    "start_time": "2020-12-02 21:36:19 -0500"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13172783	Migrate RDB lookup failed
13173737	REST API PATCH method \"/api/svm/migrations\" is only supported on the destination cluster. Issue the REST API PATCH request to the destination cluster.
13173746	Migrate resume operation failed. Cannot specify volume granular placement during resume if aggregate placement was specified during start operation.
13173747	Migrate operation failed. Volume placement can only be specified on PATCH with an action of \"resume\".
13173748	Migrate request cannot contain both \"aggregates\" and \"volume_aggregate_pairs\" within the \"volume_placement\" object.
13173763	Migrate operation failed. LIF placement is not supported in PATCH operations.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Optional property used to specify which IPspace to use for the SVM. By default, the "default" ipspace is used.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

aggregate

Aggregate to use for volume creation.

Name	Type	Description
name	string	
uuid	string	

volume

Property indicating the source volume.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

volume_aggregate_pairs

Volume-aggregate pair information.

Name	Type	Description
aggregate	aggregate	Aggregate to use for volume creation.
volume	volume	Property indicating the source volume.

volume_placement

Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

Name	Type	Description
volume_aggregate_pairs	array[volume_aggregate_pairs]	Optional property used to specify the list of desired volume-aggregate pairs in the destination.

destination

Destination cluster details for the SVM migration.

Name	Type	Description
volume_placement	volume_placement	Optional property to specify the source volume placement in the destination. It is input only and won't be returned by a subsequent GET. Volume placement is ignored if the migration resumes from the cleanup_failed state.

ip

IP information

interface

Network interface on the source SVM.

Name	Type	Description
ip	ip	IP information
name	string	The name of the interface. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

Port to use for IP interface placement on the destination SVM.

Name	Type	Description
name	string	
node	node	
uuid	string	

ip_interfaces

IP interface and network port pair information.

Name	Type	Description
interface	interface	Network interface on the source SVM.
port	port	Port to use for IP interface placement on the destination SVM.

svm_migration_ip_interface_placement

Optional property used to specify the list of source SVM's IP interface and network port pairs in the destination for migrating the source SVM IP interfaces. Note that the SVM migration does not perform any reachability checks on the IP interfaces provided.

Name	Type	Description
ip_interfaces	array[ip_interfaces]	List of source SVM's IP interface and port pairs on the destination for migrating the source SVM's IP interfaces.

messages

Name	Type	Description
code	string	Argument code
message	string	Message argument

cluster

Source cluster for the SVM migration.

Name	Type	Description
name	string	
uuid	string	

svm

Source SVM

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

source

Source cluster details for the SVM migration.

time_metrics

Various time metrics details

Name	Type	Description
cutover_complete_time	string	Cutover end time
cutover_start_time	string	Cutover start time
cutover_trigger_time	string	Cutover trigger time
end_time	string	Migration end time
last_pause_time	string	Last migration pause time
last_post_ponr_retry_time	string	Last post point of no return retry time
last_resume_time	string	Last migration resume time
start_time	string	Migration start time

svm_migration

Provides information on SVM migration, default and user specified configurations, the state of the migration, and volume transfer metrics.

Name	Type	Description
current_operation	string	
destination	destination	Destination cluster details for the SVM migration.
last_failed_state	string	Indicates the state of the migration.
last_operation	string	

Name	Type	Description
messages	array[messages]	Errors and warnings returned/displayed during migration.
point_of_no_return	boolean	Indicates if the migration has progressed beyond the point of no return. When true, the migration cannot be aborted or paused. When false, the migration can be paused or aborted.
post_ponr_retry_count	integer	Number of times the migration restarted after the point of no return.
restart_count	integer	Number of times migrate restarted the transfer, for example, rollback to transfer after starting the cutover.
source	source	Source cluster details for the SVM migration.
state	string	Indicates the state of the migration.
throttle	integer	Optional property to specify a throttle value in KB/s for each individual volume transfer. Defaults to 0 if not set, which is interpreted as unlimited. The minimum throttle value is 4 KB/s, so if you specify a throttle value between 1 and 4, it will be treated as if you specified 4.
time_metrics	time_metrics	Various time metrics details
uuid	string	SVM migration UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SVM peer permissions

SVM peer-permissions endpoint overview

Managing SVM peer permissions

A cluster administrator can provide permissions for use during intercluster SVM peer relationship creation. Once this permission exists for a local SVM and peer cluster combination on a local cluster, no explicit SVM peer accept (or REST PATCH) API is required for any incoming SVM peer relationship creation requests from a remote cluster for that local SVM. Peer relationship directly changes the state to peered on both clusters. Use an SVM name as "*" to create permissions that apply to all local SVMs.

SVM peer permission APIs

The following APIs are used to manage SVM peer permissions:

- GET /api/svm/peer-permissions
- POST /api/svm/peer-permissions
- GET /api/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}
- PATCH /api/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}

- DELETE /api/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}

Retrieve SVM peer permissions

GET `/svm/peer-permissions`

Introduced In: 9.6

Retrieves the list of SVM peer permissions.

Related ONTAP commands

- `vserver peer permission show`

Examples

The following examples show how to retrieve a collection of SVM peer permissions based on a query.

1. Retrieves a list of SVM peer permissions of a specific local SVM

```
GET "/api/svm/peer-permissions/?svm.name=VS1"
```

1. Retrieves a list of SVM peer permissions of a specific cluster peer

```
GET "/api/svm/peer-permissions/?cluster_peer.name=cluster2"
```

Learn more

- DOC /svm/peer-permissions

Parameters

Name	Type	In	Required	Description
applications	string	query	False	Filter by applications
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
cluster_peer.name	string	query	False	Filter by cluster_peer.name
cluster_peer.uuid	string	query	False	Filter by cluster_peer.uuid
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[svm_peer_permission]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "applications": [
        "snapmirror",
        "flexcache"
      ],
      "cluster_peer": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster2",
        "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345574	Failed to find the SVM or volume name with UUID.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster_peer

Peer cluster details

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer_permission

Manage SVM peer permissions.

Name	Type	Description
_links	_links	
applications	array[string]	A list of applications for an SVM peer relationship.
cluster_peer	cluster_peer	Peer cluster details
svm	svm	Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an SVM peer permission

POST `/svm/peer-permissions`

Introduced In: 9.6

Creates an SVM peer permission.

Required properties

- `svm.name` or `svm.uuid` - SVM name
- `cluster_peer.uuid` or `cluster_peer.name` - Peer cluster name or peer cluster UUID

- `applications` - Peering applications

Related ONTAP commands

- `vserver peer permission create`

Examples

The following examples show how to create SVM peer permissions.

1. Creates an SVM peer permission entry with the local SVM and cluster peer names

```
 POST "/api/svm/peer-permissions" '{"cluster_peer":{"name":"cluster2"},
"svm":{"name":"VS1"}, "applications":["snapmirror"]}'
```

1. Creates an SVM peer permission entry with the local SVM and cluster peer UUID

```
 POST "/api/svm/peer-permissions" '{"cluster_peer":{"uuid":"d3268a74-ee76-
11e8-a9bb-005056ac6dc9"}, "svm":{"uuid":"8f467b93-f2f1-11e8-9027-
005056ac81fc"}, "applications":["snapmirror"]}'
```

1. Creates an SVM peer permission entry with all SVMs and the cluster peer name

```
 POST "/api/svm/peer-permissions" '{"cluster_peer":{"name":"cluster2"},
"svm":{"name":"*"}, "applications":["snapmirror"]}'
```

Learn more

- DOC /svm/peer-permissions

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.

Name	Type	Description
cluster_peer	cluster_peer	Peer cluster details
svm	svm	Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Example request

```
{
  "applications": [
    "snapmirror",
    "flexcache"
  ],
  "cluster_peer": {
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.
cluster_peer	cluster_peer	Peer cluster details
svm	svm	Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Example response

```
{
  "applications": [
    "snapmirror",
    "flexcache"
  ],
  "cluster_peer": {
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345572	{field} is a required field.
26345573	Failed to find the SVM or volume UUID with name.
26345574	Failed to find the SVM or volume name with UUID.
26345575	The specified peer cluster name and peer cluster UUID do not match.
9896057	SVM peer permission already exists.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_peer

Peer cluster details

Name	Type	Description
name	string	
uuid	string	

svm

Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer_permission

Manage SVM peer permissions.

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.
cluster_peer	cluster_peer	Peer cluster details
svm	svm	Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete SVM peer permissions

DELETE `/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}`

Introduced In: 9.6

Deletes the SVM peer permissions.

Related ONTAP commands

- `vserver peer permission delete`

Example

Deletes an SVM peer permission.

```
DELETE "/api/svm/peer-permissions/d3268a74-ee76-11e8-a9bb-
005056ac6dc9/8f467b93-f2f1-11e8-9027-005056ac81fc"
```

Learn more

- DOC /svm/peer-permissions

Parameters

Name	Type	In	Required	Description
cluster_peer.uuid	string	path	True	Peer cluster UUID • Introduced in: 9.7
svm.uuid	string	path	True	SVM UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345574	Failed to find the SVM or volume name with UUID.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an SVM peer permission instance

GET `/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}`

Introduced In: 9.6

Retrieves the SVM peer permission instance.

Related ONTAP commands

- `vserver peer permission show`

Example

The following example shows how to retrieve the parameters for an SVM peer permission.

```
GET "/api/svm/peer-permissions/d3268a74-ee76-11e8-a9bb-
005056ac6dc9/8f467b93-f2f1-11e8-9027-005056ac81fc"
```

Learn more

- DOC /svm/peer-permissions

Parameters

Name	Type	In	Required	Description
cluster_peer.uuid	string	path	True	Peer cluster UUID • Introduced in: 9.7
svm.uuid	string	path	True	SVM UUID
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
applications	array[string]	A list of applications for an SVM peer relationship.
cluster_peer	cluster_peer	Peer cluster details
svm	svm	Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "applications": [
    "snapmirror",
    "flexcache"
  ],
  "cluster_peer": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345574	Failed to find the SVM or volume name with UUID.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster_peer

Peer cluster details

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update SVM peer permissions

PATCH `/svm/peer-permissions/{cluster_peer.uuid}/{svm.uuid}`

Introduced In: 9.6

Updates the SVM peer permissions.

Related ONTAP commands

- `vserver peer permission modify`

Example

Updates an SVM peer permission.

```
PATCH "/api/svm/peer-permissions/d3268a74-ee76-11e8-a9bb-
005056ac6dc9/8f467b93-f2f1-11e8-9027-005056ac81fc"
'{"applications":["flexcache"]}'
```

Learn more

- DOC /svm/peer-permissions

Parameters

Name	Type	In	Required	Description
cluster_peer.uuid	string	path	True	Peer cluster UUID • Introduced in: 9.7
svm.uuid	string	path	True	SVM UUID

Request Body

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.

Example request

```
{
  "applications": [
    "snapmirror",
    "flexcache"
  ]
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.

Example response

```
{
  "applications": [
    "snapmirror",
    "flexcache"
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345572	{field} is a required field.
26345574	Failed to find the SVM or volume name with UUID.
9896059	SVM peer permission does not exist.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_peer

Peer cluster details

Name	Type	Description
name	string	
uuid	string	

svm

Local SVM permitted for peer relationship. To create peer permissions for all SVMs, specify the SVM name as "*".

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer_permission

Manage SVM peer permissions.

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SVM peer relationships

SVM peers endpoint overview

Managing SVM peers

The SVM peer commands allow you to create and manage SVM peering relationships.

SVM peer APIs

The following APIs are used to manage SVM peers:

- GET /api/svm/peers
- POST /api/svm/peers
- GET /api/svm/peers/{uuid}
- PATCH /api/svm/peers/{uuid}
- DELETE /api/svm/peers/{uuid}

Retrieve SVM peer relationships

GET `/svm/peers`

Introduced In: 9.6

Retrieves the list of SVM peer relationships.

Related ONTAP commands

- `vserver peer show`

Examples

The following examples show how to retrieve a collection of SVM peer relationships based on a query.

1. Retrieves a list of SVM peers of a specific local SVM

```
GET "/api/svm/peers/?svm.name=VS1"
```

1. Retrieves a list of SVM peers of a specific cluster peer

```
GET "/api/svm/peers/?peer.cluster.name=cluster2"
```

Learn more

- DOC /svm/peers

Parameters

Name	Type	In	Required	Description
applications	string	query	False	Filter by applications
state	string	query	False	Filter by state
name	string	query	False	Filter by name
peer.cluster.name	string	query	False	Filter by peer.cluster.name
peer.cluster.uuid	string	query	False	Filter by peer.cluster.uuid
peer.svm.name	string	query	False	Filter by peer.svm.name
peer.svm.uuid	string	query	False	Filter by peer.svm.uuid
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[svm_peer]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "applications": [
        "snapmirror",
        "lun_copy"
      ],
      "force": true,
      "name": "string",
      "peer": {
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster2",
          "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
        },
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "state": "peered",
```

```
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345578	Internal error. Unable to retrieve local or peer SVM name.
9896086	Peer SVM name conflicts with one of the following: a peer SVM in an existing SVM peer relationship, a local SVM, or an IPSpace. Use the "name" property to uniquely specify the peer SVM alias name.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

peer

Details for a peer SVM object.

Name	Type	Description
cluster	cluster	
svm	svm	SVM, applies only to SVM-scoped objects.

svm

Local SVM details

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer

An SVM peer relationship object.

Name	Type	Description
_links	_links	
applications	array[string]	A list of applications for an SVM peer relationship.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.
peer	peer	Details for a peer SVM object.

Name	Type	Description
state	string	SVM peering state. To accept a pending SVM peer request, PATCH the state to "peered". To reject a pending SVM peer request, PATCH the state to "rejected". To suspend a peered SVM peer relationship, PATCH the state to "suspended". To resume a suspended SVM peer relationship, PATCH the state to "peered". The states "initiated", "pending", and "initializing" are system-generated and cannot be used for PATCH.
svm	svm	Local SVM details
uuid	string	SVM peer relationship UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new SVM peer relationship

POST `/svm/peers`

Introduced In: 9.6

Creates a new SVM peer relationship.

Important notes

- The create request accepts peer SVM name as input instead of peer SVM UUID as the local cluster cannot validate peer SVM based on UUID.
- The input parameter `name` refers to the local name of the peer SVM. The `peer cluster name` parameter is optional for creating intracluster SVM peer relationships.

Required properties

- `svm.name` or `svm.uuid` - SVM name or SVM UUID
- `peer.svm.name` or `peer.svm.uuid` - Peer SVM name or Peer SVM UUID
- `peer.cluster.name` or `peer.cluster.uuid` - Peer cluster name or peer cluster UUID
- `applications` - Peering applications

Related ONTAP commands

- `vserver peer create`

Example

Creates a new SVM peer relationship.

```
POST "/api/svm/peers" '{"svm":{"name":"vs1"},
"peer.cluster.name":"cluster2", "peer.svm.name":"VS1",
"applications":["snapmirror"]}'
```

Learn more

- DOC /svm/peers

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.

Name	Type	Description
force	boolean	Use this to suspend, resume or delete the SVM peer relationship even if the remote cluster is not accessible due to, for example, network connectivity issues.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.
peer	peer	Details for a peer SVM object.
svm	svm	Local SVM details
uuid	string	SVM peer relationship UUID

Example request

```
{
  "applications": [
    "snapmirror",
    "lun_copy"
  ],
  "name": "string",
  "peer": {
    "cluster": {
      "name": "cluster2",
      "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
13434889	Internal error. Wait and retry.
26345575	The specified peer cluster name and peer cluster UUID do not match.
26345579	The specified field is invalid.
26345580	SVM name or SVM UUID must be provided.
9896086	Peer SVM name conflicts with one of the following: a peer SVM in an existing SVM peer relationship, a local SVM, or an IPSpace. Use the "name" property to uniquely specify the peer SVM alias name.

Error codes	Description
9895996	Cannot specify lun-copy as an inter-cluster application.
9896093	The flexcache application is not supported on this platform.
9896095	SVM name is in use by a peer Vserver in a Vserver peer relationship.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

peer

Details for a peer SVM object.

Name	Type	Description
cluster	cluster	
svm	svm	SVM, applies only to SVM-scoped objects.

svm

Local SVM details

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer

An SVM peer relationship object.

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.
force	boolean	Use this to suspend, resume or delete the SVM peer relationship even if the remote cluster is not accessible due to, for example, network connectivity issues.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.
peer	peer	Details for a peer SVM object.
svm	svm	Local SVM details
uuid	string	SVM peer relationship UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an SVM peer relationship

DELETE `/svm/peers/{uuid}`

Introduced In: 9.6

Deletes the SVM peer relationship.

Related ONTAP commands

- `vserver peer delete`

Example

1. Deletes an SVM peer relationship.

```
DELETE "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9"
```

1. Deletes an SVM peer relationship using force flag

```
DELETE "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9" '{"force":
"true"}'
```

Learn more

- DOC /svm/peers

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SVM peer relationship UUID • Introduced in: 9.7

Name	Type	In	Required	Description
force	boolean	query	False	Use this parameter to delete the SVM peer relationship even when the remote cluster is not accessible. For example, if there are network connectivity issues. • Introduced in: 9.17
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345578	Internal error. Unable to retrieve local or peer SVM name.
9895956	Cannot delete an SVM that is part of an SVM peer or transition peer relationship.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an SVM peer relationship instance

GET `/svm/peers/{uuid}`

Introduced In: 9.6

Retrieves the SVM peer relationship instance.

Related ONTAP commands

- `vserver peer show`

Example

Retrieves the parameters of an SVM peer relationship.

```
GET "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9"
```

Learn more

- DOC /svm/peers

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SVM peer relationship UUID • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
applications	array[string]	A list of applications for an SVM peer relationship.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.
peer	peer	Details for a peer SVM object.
state	string	SVM peering state. To accept a pending SVM peer request, PATCH the state to "peered". To reject a pending SVM peer request, PATCH the state to "rejected". To suspend a peered SVM peer relationship, PATCH the state to "suspended". To resume a suspended SVM peer relationship, PATCH the state to "peered". The states "initiated", "pending", and "initializing" are system-generated and cannot be used for PATCH.
svm	svm	Local SVM details
uuid	string	SVM peer relationship UUID

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "applications": [
    "snapmirror",
    "lun_copy"
  ],
  "force": true,
  "name": "string",
  "peer": {
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster2",
      "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "state": "peered",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
26345578	Internal error. Unable to retrieve local or peer SVM name.
9896086	Peer SVM name conflicts with one of the following: a peer SVM in an existing SVM peer relationship, a local SVM, or an IPSpace. Use the "name" property to uniquely specify the peer SVM alias name.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

peer

Details for a peer SVM object.

Name	Type	Description
cluster	cluster	
svm	svm	SVM, applies only to SVM-scoped objects.

svm

Local SVM details

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an SVM peer relationship

PATCH `/svm/peers/{uuid}`

Introduced In: 9.6

Updates the SVM peer relationship.

Related ONTAP commands

- `vserver peer modify`

Examples

The following examples show how to update an SVM peer relationship. The input parameter 'name' refers to the local name of the peer SVM.

1. Accepts an SVM peer relationship

```
 PATCH "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9"
'{"state":"peered"}'
```

1. Updates the local name of an SVM peer relationship

```
 PATCH "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9"
'{"name":"vs2"}'
```

1. Suspends an SVM peer relationship using force flag

```
 PATCH "/api/svm/peers/d3268a74-ee76-11e8-a9bb-005056ac6dc9"
'{"state":"suspended", "force": "true"}'
```

Learn more

- DOC /svm/peers

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SVM peer relationship UUID • Introduced in: 9.7

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.
force	boolean	Use this to suspend, resume or delete the SVM peer relationship even if the remote cluster is not accessible due to, for example, network connectivity issues.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.

Name	Type	Description
state	string	SVM peering state. To accept a pending SVM peer request, PATCH the state to "peered". To reject a pending SVM peer request, PATCH the state to "rejected". To suspend a peered SVM peer relationship, PATCH the state to "suspended". To resume a suspended SVM peer relationship, PATCH the state to "peered". The states "initiated", "pending", and "initializing" are system-generated and cannot be used for PATCH.
uuid	string	SVM peer relationship UUID

Example request

```
{
  "applications": [
    "snapmirror",
    "lun_copy"
  ],
  "name": "string",
  "state": "peered",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
13434889	Internal error. Wait and retry.
26345575	The specified peer cluster name and peer cluster UUID do not match.
26345576	Given peer state is invalid.
26345577	One of the following is required: applications, state, or name.
26345578	Internal error. Unable to retrieve local or peer SVM name.
26345579	The specified field is invalid.
26345581	Peer cluster name could not be retrieved or validated.
9896077	The peer relationship is in use by FlexCache. View the FlexCache relationships, delete them and retry the operation.
9896088	System generated a name for the peer SVM because of a naming conflict. Use the name property to uniquely identify the peer SVM alias name.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

peer

Details for a peer SVM object.

Name	Type	Description
cluster	cluster	
svm	svm	SVM, applies only to SVM-scoped objects.

svm

Local SVM details

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_peer

An SVM peer relationship object.

Name	Type	Description
applications	array[string]	A list of applications for an SVM peer relationship.
force	boolean	Use this to suspend, resume or delete the SVM peer relationship even if the remote cluster is not accessible due to, for example, network connectivity issues.
name	string	A peer SVM alias name to avoid a name conflict on the local cluster.
state	string	SVM peering state. To accept a pending SVM peer request, PATCH the state to "peered". To reject a pending SVM peer request, PATCH the state to "rejected". To suspend a peered SVM peer relationship, PATCH the state to "suspended". To resume a suspended SVM peer relationship, PATCH the state to "peered". The states "initiated", "pending", and "initializing" are system-generated and cannot be used for PATCH.
uuid	string	SVM peer relationship UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SVMs

SVM svms endpoint overview

Managing SVMs

Cluster administrators can manage any SVM bound to the cluster. In addition, SVMs can also be managed by their SVM administrators. The SVM administrator manages the SVM resources, such as volumes, protocols and services, depending on the capabilities assigned by the cluster administrator. SVM administrators cannot create, modify, or delete SVMs. The cluster administrator manages SVM create, modify, or delete operations.

While configuring CIFS, you must also configure IP interfaces and DNS. No other protocol configuration is allowed when configuring NVMe. NFS, FCP, CIFS, iSCSI, and S3 protocols can be configured together.

SVM administrators might have all or some of the following administration capabilities:

1. Data access protocol configuration
   Configures data access protocols, such as NFS, CIFS, iSCSI, S3, and Fibre Channel (FC) protocols (Fibre Channel over Ethernet included).
2. Services configuration
   Configures services such as LDAP, NIS, and DNS.
3. Monitoring SVM
   Monitors jobs, network connections, network interfaces, and SVM health.
4. Updating the TLS certificate for this SVM.

Retrieve SVMs and SVM properties

GET `/svm/svms`

Introduced In: 9.6

Retrieves a list of SVMs and individual SVM properties. This includes protocol configurations such as CIFS, NFS and S3, export policies, name service configurations, and network services.

Important notes

- The SVM object includes a large set of fields and can be expensive to retrieve. Use this API to list the collection of SVMs, and to retrieve only the full details of individual SVMs as needed.
- It is not recommended to create or delete more than five SVMs in parallel.
- REST APIs only expose a data SVM as an SVM.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `snapmirror.*`

Related ONTAP commands

- `vserver show`

Examples

- Retrieves a list of SVMs in the cluster sorted by name.

```
GET "/api/svm/svms?order_by=name"
```

- Retrieves a list of SVMs in the cluster that have the NFS protocol enabled.

```
GET "/api/svm/svms?nfs.enabled=true"
```

- Retrieves a list of SVMs in the cluster that have the CIFS protocol enabled.

```
GET "/api/svm/svms?cifs.enabled=true"
```

- Retrieves a list of SVMs in the cluster that have the S3 protocol enabled.

```
GET "/api/svm/svms?s3.enabled=true"
```

- Retrieves a list of SVMs in the cluster that have the FCP protocol allowed.

```
GET "/api/svm/svms?fcp.allowed=true"
```

- Retrieves a list of SVMs in the cluster that have the CIFS protocol allowed.

```
GET "/api/svm/svms?cifs.allowed=true"
```

- Retrieves a list of SVMs in the cluster where the NDMP protocol is specified as allowed.

```
GET "/api/svm/svms?ndmp.allowed=true"
```

- Retrieves a list of SVMs in the cluster that have the s3 protocol allowed.

```
GET "/api/svm/svms?s3.allowed=true"
```

Learn more

- DOC /svm/svms

Parameters

Name	Type	In	Required	Description
nis.enabled	boolean	query	False	Filter by nis.enabled
nis.servers	string	query	False	Filter by nis.servers
nis.domain	string	query	False	Filter by nis.domain
nvme.allowed	boolean	query	False	Filter by nvme.allowed • Introduced in: 9.9
nvme.enabled	boolean	query	False	Filter by nvme.enabled
language	string	query	False	Filter by language
nfs.allowed	boolean	query	False	Filter by nfs.allowed • Introduced in: 9.9

Name	Type	In	Required	Description
nfs.enabled	boolean	query	False	Filter by nfs.enabled
comment	string	query	False	Filter by comment
aggregates.name	string	query	False	Filter by aggregates.name
aggregates.uuid	string	query	False	Filter by aggregates.uuid
subtype	string	query	False	Filter by subtype
dns.servers	string	query	False	Filter by dns.servers
dns.domains	string	query	False	Filter by dns.domains
fcp.allowed	boolean	query	False	Filter by fcp.allowed • Introduced in: 9.9
fcp.enabled	boolean	query	False	Filter by fcp.enabled
iscsi.allowed	boolean	query	False	Filter by iscsi.allowed • Introduced in: 9.9
iscsi.enabled	boolean	query	False	Filter by iscsi.enabled
name	string	query	False	Filter by name
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ipspace.name	string	query	False	Filter by ipspace.name
ldap.base_dn	string	query	False	Filter by ldap.base_dn
ldap.servers	string	query	False	Filter by ldap.servers

Name	Type	In	Required	Description
ldap.enabled	boolean	query	False	Filter by ldap.enabled
ldap.bind_dn	string	query	False	Filter by ldap.bind_dn
ldap.ad_domain	string	query	False	Filter by ldap.ad_domain
uuid	string	query	False	Filter by uuid
cifs.name	string	query	False	Filter by cifs.name
cifs.ad_domain.fqdn	string	query	False	Filter by cifs.ad_domain.fqdn
cifs.ad_domain.organizational_unit	string	query	False	Filter by cifs.ad_domain.organizational_unit
cifs.allowed	boolean	query	False	Filter by cifs.allowed • Introduced in: 9.9
cifs.enabled	boolean	query	False	Filter by cifs.enabled
s3.name	string	query	False	Filter by s3.name • Introduced in: 9.7
s3.allowed	boolean	query	False	Filter by s3.allowed • Introduced in: 9.12
s3.enabled	boolean	query	False	Filter by s3.enabled • Introduced in: 9.7
s3.is_http_enabled	boolean	query	False	Filter by s3.is_http_enabled • Introduced in: 9.16

Name	Type	In	Required	Description
s3.is_https_enabled	boolean	query	False	Filter by s3.is_https_enabled • Introduced in: 9.16
s3.port	integer	query	False	Filter by s3.port • Introduced in: 9.16
s3.secure_port	integer	query	False	Filter by s3.secure_port • Introduced in: 9.16
s3.certificate.uuid	string	query	False	Filter by s3.certificate.uuid • Introduced in: 9.16
s3.certificate.name	string	query	False	Filter by s3.certificate.name • Introduced in: 9.16
ndmp.allowed	boolean	query	False	Filter by ndmp.allowed • Introduced in: 9.10
nsswitch.netgroup	string	query	False	Filter by nsswitch.netgroup
nsswitch.group	string	query	False	Filter by nsswitch.group
nsswitch.hosts	string	query	False	Filter by nsswitch.hosts
nsswitch.namemap	string	query	False	Filter by nsswitch.namemap

Name	Type	In	Required	Description
nsswitch.passwd	string	query	False	Filter by nsswitch.passwd
qos_policy.name	string	query	False	Filter qos_policy.name • Introduced in: 9.9
qos_policy.uuid	string	query	False	Filter qos_policy.uuid • Introduced in: 9.9
max_volumes	string	query	False	Filter max_volumes • Introduced in: 9.9
fc_interfaces.name	string	query	False	Filter by fc_interfaces.name • Introduced in: 9.7
fc_interfaces.data_protocol	string	query	False	Filter by fc_interfaces.data_protocol • Introduced in: 9.7
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name
state	string	query	False	Filter by state
certificate.uuid	string	query	False	Filter by certificate.uuid • Introduced in: 9.7

Name	Type	In	Required	Description
anti_ransomware_default_volume_state	string	query	False	Filter by anti_ransomware_default_volume_state • Introduced in: 9.10
qos_adaptive_policy_group_template.name	string	query	False	Filter by qos_adaptive_policy_group_template.name • Introduced in: 9.13
qos_adaptive_policy_group_template.uuid	string	query	False	Filter by qos_adaptive_policy_group_template.uuid • Introduced in: 9.13
qos_policy_group_template.name	string	query	False	Filter by qos_policy_group_template.name • Introduced in: 9.16
qos_policy_group_template.uuid	string	query	False	Filter by qos_policy_group_template.uuid • Introduced in: 9.16
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	query	False	Filter by anti_ransomware_auto_switch_from_learning_to_enabled • Introduced in: 9.13

Name	Type	In	Required	Description
anti_ransomware_auto_switch_minimum_incoming_data	string	query	False	Filter by anti_ransomware_auto_switch_minimum_incoming_data • Introduced in: 9.13
anti_ransomware_auto_switch_minimum_incoming_data_percent	integer	query	False	Filter by anti_ransomware_auto_switch_minimum_incoming_data_percent • Introduced in: 9.13
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	query	False	Filter by anti_ransomware_auto_switch_duration_without_new_file_extension • Introduced in: 9.13
anti_ransomware_auto_switch_minimum_learning_period	integer	query	False	Filter by anti_ransomware_auto_switch_minimum_learning_period • Introduced in: 9.13
anti_ransomware_auto_switch_minimum_file_count	integer	query	False	Filter by anti_ransomware_auto_switch_minimum_file_count • Introduced in: 9.13
anti_ransomware_auto_switch_minimum_file_extension	integer	query	False	Filter by anti_ransomware_auto_switch_minimum_file_extension • Introduced in: 9.13

Name	Type	In	Required	Description
auto_enable_analytics	boolean	query	False	Filter by auto_enable_analytics. • Introduced in: 9.12
auto_enable_activity_tracking	boolean	query	False	Filter by auto_enable_activity_tracking. • Introduced in: 9.12
storage.allocated	integer	query	False	Filter by storage_allocated • Introduced in: 9.14
storage.available	integer	query	False	Filter by storage_available • Introduced in: 9.14
storage.used_percentage	integer	query	False	Filter by storage_used_percentage • Introduced in: 9.14
number_of_volumes_in_recovery_queue	integer	query	False	Filter by number_of_volumes_in_recovery_queue • Introduced in: 9.13
total_volume_size_in_recovery_queue	integer	query	False	Filter by total_volume_size_in_recovery_queue • Introduced in: 9.13

Name	Type	In	Required	Description
storage.limit_threshold_exceeded	integer	query	False	Filter by storage.limit_threshold_exceeded • Introduced in: 9.14
storage.limit	integer	query	False	Filter by storage.limit • Introduced in: 9.14
storage.limit_threshold_alert	integer	query	False	Filter by storage.limit_threshold_alert • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[svm]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "aggregates": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "available_size": 10156560384,
          "name": "aggr1",
          "snaplock_type": "string",
          "state": "string",
          "type": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "anti_ransomware_auto_switch_minimum_incoming_data": "string",
      "anti_ransomware_default_volume_state": "string",
      "anti_ransomware_incoming_write_threshold": "string",
      "anti_ransomware_incoming_write_threshold_percent": "string",
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
      },
      "cifs": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ad_domain": {
          "default_site": "string",
          "fqdn": "example.com",
          "organizational_unit": "string"
        },
        "auth-style": "domain",
        "domain_workgroup": "string",
        "name": "CIFS1",
        "workgroup": "workgrp1"
      },
      "comment": "string",
      "dns": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "domains": [
          "example.com",
          "example2.example3.com"
        ],
        "servers": [
          "10.224.65.20",
          "2001:db08:a0b:12f0::1"
        ]
      },
      "fc_interfaces": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "data_protocol": "string",
          "name": "lif1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "fcp": {
```

```
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    },
    "ip_interfaces": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "services": [
          "data_nfs"
        ],
        "subnet": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "subnet1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "Default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "iscsi": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
```

```
        }
      },
      "language": "c.utf_8",
      "ldap": {
        "ad_domain": "string",
        "base_dn": "string",
        "bind_dn": "string",
        "servers": [
          "string"
        ]
      },
      "max_volumes": "string",
      "name": "svm1",
      "nfs": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "nis": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "domain": "string",
        "servers": [
          "string"
        ]
      },
      "nsswitch": {
        "group": [
          "string"
        ],
        "hosts": [
          "string"
        ],
        "namemap": [
          "string"
        ],
        "netgroup": [
          "string"
        ],
        "passwd": [
          "string"
```

```
        ]
      },
      "number_of_volumes_in_recovery_queue": 0,
      "nvme": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "qos_adaptive_policy_group_template": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "qos_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "qos_policy_group_template": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
```

```
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "s3": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "certificate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "default_unix_user": "string",
        "default_win_user": "string",
        "name": "s3-server-1"
      },
      "snapmirror": {
        "protected_consistency_group_count": 0,
        "protected_volumes_count": 0
      },
      "snapshot_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "state": "running",
      "storage": {
        "allocated": 0,
```

```
        "available": 0,
        "used_percentage": 0
      },
      "subtype": "string",
      "total_volume_size_in_recovery_queue": 0,
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregates

Name	Type	Description
_links	_links	
available_size	integer	Space available, in bytes.
name	string	
snaplock_type	string	SnapLock type.
state	string	Aggregate state.
type	string	Type of aggregate.
uuid	string	

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

arw_vserver

Anti-ransomware related information for the SVM.

Name	Type	Description
event_log	event_log	

certificate

Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server.

cifs

Name	Type	Description
_links	_links	
ad_domain	ad_domain	
allowed	boolean	If this is set to true, an SVM administrator can manage the CIFS service. If it is false, only the cluster administrator can manage the service.

Name	Type	Description
auth-style	string	Authentication type.
domain_workgroup	string	The NetBIOS name of the domain or workgroup associated with the CIFS server.
enabled	boolean	If allowed, setting to true enables the CIFS service.
name	string	The NetBIOS name of the CIFS server.
workgroup	string	The workgroup name.

dns

Name	Type	Description
_links	_links	

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc_port_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the Fibre Channel interface is defined by the location of its port.

Name	Type	Description
port	fc_port_reference	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

fc_interface_svm

Name	Type	Description
_links	_links	
data_protocol	string	The data protocol for which the Fibre Channel interface is configured.
name	string	The name of the Fibre Channel interface.
uuid	string	The unique identifier of the Fibre Channel interface.

fcp

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the FCP service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the FCP service.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
_links	_links	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port_svm

Name	Type	Description
_links	_links	
name	string	
uuid	string	

location

Home_node is optional.

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name.
home_node	home_node	
home_port	port_svm	

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
_links	_links	
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

ip_interface_svm

Interface parameters. Name and home_node are optional.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface (optional).
services	array[string]	The services associated with the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

iscsi

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the iSCSI service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the iSCSI service.

ldap

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST.
base_dn	string	Specifies the default base DN for all searches.
bind_dn	string	Specifies the user that binds to the LDAP servers. SVM API supports anonymous binding. For Simple and SASL LDAP binding, use the LDAP API endpoint.
enabled	boolean	Enable LDAP? Setting to true creates a configuration if not already created.

Name	Type	Description
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
servers	array[string]	

ndmp

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NDMP service. If it is false, only the cluster administrator can manage the service.

nfs

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the NFS service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the NFS service.

nis

Name	Type	Description
_links	_links	
domain	string	The NIS domain to which this configuration belongs.
enabled	boolean	Enable NIS? Setting to true creates a configuration if not already created.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

nsswitch

Name service switch configuration

Name	Type	Description
group	array[string]	Group sources
hosts	array[string]	Host sources
namemap	array[string]	NameMap sources
netgroup	array[string]	NetGroup sources
passwd	array[string]	Password sources

nvme

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the NVMe service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the NVMe service.

qos_adaptive_policy_group_template

This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy

This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy_group_template

This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

network_route_for_svm

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

s3

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether or not to enable S3. Setting this value to true creates a service if one is not yet created.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server. By default, HTTP is disabled on the S3 server.

Name	Type	Description
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server. By default, HTTPS is enabled on the S3 server.
name	string	Specifies the name of the S3 server. A server name length can range from 1 to 253 characters and can only contain the following combination of characters 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443.

snapmirror

Specifies attributes for SVM DR protection.

Name	Type	Description
is_protected	boolean	Specifies whether the SVM is a SnapMirror source SVM, using SnapMirror to protect its data.
protected_consistency_group_count	integer	Specifies the number of SVM DR protected consistency groups in the SVM.
protected_volumes_count	integer	Specifies the number of SVM DR protected volumes in the SVM.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage

Name	Type	Description
allocated	integer	Total size of the volumes in SVM, in bytes.
available	integer	Currently available storage capacity in SVM, in bytes.
limit	integer	Maximum storage permitted on a single SVM, in bytes.
limit_threshold_alert	integer	Indicates at what percentage of storage capacity an alert message is sent. The default value is 90.
limit_threshold_exceeded	boolean	Indicates whether the total storage capacity exceeds the alert percentage.
used_percentage	integer	The percentage of storage capacity used.

svm

Name	Type	Description
_links	_links	
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.

Name	Type	Description
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
certificate	certificate	Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.
cifs	cifs	
comment	string	Comment
dns	dns	
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM

Name	Type	Description
ipspace	ipspace	Either the UUID or name may be supplied on input.
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
ldap	ldap	
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nis	nis	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.

Name	Type	Description
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.
qos_policy	qos_policy	This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
state	string	SVM State
storage	storage	

Name	Type	Description
subtype	string	SVM subtype. The SVM subtype sync_destination is created automatically when an SVM of subtype sync_source is created on the source MetroCluster cluster. A POST request with sync_destination as SVM subtype is invalid.
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.
uuid	string	The unique identifier of the SVM.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create and provision an SVM

POST `/svm/svms`

Introduced In: 9.6

Creates and provisions an SVM. If no IPspace is provided, then the SVM is created on the `Default` IPspace.

- The number of parallel SVMs that can be created must not be greater than five.
- If a sixth SVM POST request is issued, the following error message is generated: "Maximum allowed SVM jobs exceeded. Wait for the existing SVM jobs to complete and try again."

Required properties

- `name` - Name of the SVM to be created.

Recommended optional properties

- `ipspace.name` or `ipspace.uuid` - IPspace of the SVM
- `is_space_reporting_logical` - Logical Space Reporting parameter of the SVM
- `is_space_enforcement_logical` - Logical Space Enforcement parameter of the SVM
- `ip_interfaces` - If provided, the following fields are required:
- `ip_interfaces.name` - Name of the interface
- `ip_interfaces.ip.address` - IP address
- `ip_interfaces.ip.netmask` - Netmask length or IP address
- `ip_interfaces.location.broadcast_domain.uuid` or `ip_interfaces.location.broadcast_domain.name` - Broadcast domain name or UUID belonging to the same IPspace of the SVM.
- `ip_interfaces.location.home_port.name` - Home port name
- `ip_interfaces.location.home_port.uuid` - Home port uuid
- `subnet.uuid` or `subnet.name` - Either name or UUID of the subnet to create.
- `routes` - If provided, the following field is required:
  - `routes.gateway` - Gateway IP address
- `cifs` - If provided, interfaces, routes and DNS must be provided. The following fields are also required:
  - `cifs.name` - Name of the CIFS server to be created for the SVM.
  - `cifs.ad_domain.fqdn` - Fully qualified domain name
  - `cifs.ad_domain.user` - Administrator username
  - `cifs.ad_domain.password` - User password
- `ldap` - If provided, the following fields are required:
  - `ldap.servers` or `ldap.ad_domain` - LDAP server list or Active Directory domain
  - `ldap.bind_dn` - Bind DN
  - `ldap.base_dn` - Base DN
- `nis` - If provided, the following fields are required:
  - `nis.servers` - NIS servers
  - `nis.domain` - NIS domain
- `dns` - If provided, the following fields are required:
  - `dns.servers` - Name servers
  - `dns.domains` - Domains
- `fc_interfaces` - If provided, the following fields are required:

- `fc_interfaces.name` - Fibre Channel interface name
- `fc_interfaces.data_protocol` - Fibre Channel interface data protocol
- `fc_interfaces.location.port.uuid` or `fc_interfaces.location.port.name` and `fc_interfaces.location.port.node.name` - Either port UUID or port name and node name together must be provided.

- `s3` - If provided, the following field should also be specified:
  - <code>s3.name</code> - Name of the S3 server. If <code>s3.name' is not specified while </code>s3.enabled` is set to 'true', the S3 server will be created with the default name '<svm.name>_S3Server'.</svm.name>
  - `s3.port` - S3 server listener port.
  - `s3.secure_port` - S3 server listener port for HTTPS.
  - `s3.is_http_enabled` - S3 server connections over HTTP.
  - `s3.is_https_enabled` - S3 server connections over HTTPS.
  - `s3.certificate.name` - S3 server certificate name. This is required if the S3 server runs over HTTPS.
  - `s3.certificate.uuid` - S3 server certificate UUID. This is required if the S3 server runs over HTTPS.
- `auto_enable_analytics` - Auto-enable file system analytics on new volumes created in the SVM.
- `auto_enable_activity_tracking` - Auto-enable volume activity-tracking on new volumes created in the SVM.
- `storage.limit` - Maximum storage permitted on a single SVM.
- `storage.limit_threshold_alert` - At what percentage of storage capacity, alert message needs to be sent.

Default property values

If not specified in POST, the following default property values are assigned:

- `language` - *C.UTF-8*
- `ipspace.name` - *Default*
- `snapshot_policy.name` - *Default*
- `subtype` - *Default* (*sync-source* if MetroCluster configuration)
- `anti_ransomware_default_volume_state` - *disabled*
- `qos_adaptive_policy_group_template` - *extreme* (if using a platform with disaggregated storage and neither qos_policy_group_template nor qos_adaptive_policy_group_template are provided)

Related ONTAP commands

- `vserver create`
- `vserver add-aggregates`
- `network interface create`

- `network route create`
- `vserver services name-service dns create`
- `vserver nfs create`
- `vserver services name-service ldap client create`
- `vserver cifs create`
- `vserver services name-service nis-domain create`
- `vserver iscsi create`
- `vserver nvme create`
- `vserver fcp create`
- `vserver services name-service ns-switch create`
- `vserver object-store-server create`
- `vserver add-protocols`
- `vserver remove-protocols`

Examples

- Creates an SVM with default "snapshot_policy".

```
POST "/api/svm/svms" '{"name":"testVs",
"snapshot_policy":{"name":"default"}}'
```

- Creates an SVM and configures NFS, CIFS, and S3.

```
POST "/api/svm/svms" '{"name":"testVs", "nfs":{"enabled":"true"},
"cifs":{"enabled":"true"}, "s3":{"enabled":"true"}}'
```

- Creates an SVM and configures NVMe.

```
POST "/api/svm/svms" '{"name":"testVs", "nvme":{"enabled":"true"}}'
```

- Creates an SVM and configures LDAP.

```
POST "/api/svm/svms" '{"name":"testVs",
"snapshot_policy":{"name":"default"},
"ldap":{"servers":["10.140.101.1","10.140.101.2"],
"ad_domain":"abc.com", "base_dn":"dc=netapp,dc=com",
"bind_dn":"dc=netapp,dc=com"}}'
```

- Creates an SVM and configures NIS.

```
POST "/api/svm/svms" '{"name":"testVs",
"snapshot_policy":{"name":"default"}, "nis":{"enabled":"true",
"domain":"def.com","servers":["10.224.223.130", "10.224.223.131"]}}'
```

- Creates an SVM and configures DNS.

```
POST "/api/svm/svms" '{"name":"testVs",
"snapshot_policy":{"name":"default"},
"dns":{"domains":["abc.com","def.com"], "servers":["10.224.223.130",
"10.224.223.131"]}}'
```

- Creates an SVM and configures a LIF.

```
POST "/api/svm/svms" '{"name":"testVs", "ip_interfaces":
[{"name":"lif1", "ip":{"address":"10.10.10.7", "netmask":
"255.255.255.0"}, "location":{"broadcast_domain":{"name":"bd1"},
"home_node":{"name":"node1"}}, "service_policy": "default-
management"}]}'
```

- Creates an SVM and configures a LIF with IPV6 address.

```
POST "/api/svm/svms" '{"name":"testVs", "ip_interfaces":
[{"name":"lif2",
"ip":{"address":"fd22:8b1e:b255:202:2a0:98ff:fe01:7d5b",
"netmask":"24"}, "location":{"broadcast_domain":{"name":"bd1"},
"home_node":{"name":"node1"}}, "service_policy": "default-
management"}]}'
```

- Creates an SVM and configures CIFS.

```
POST "/api/svm/svms" '{"name":"testVs", "cifs":{"name":"CIFDOC",
"ad_domain":{"fqdn":"abc.def.com", "organizational_unit":"CN=Computers",
"user":"cif_admin", "password":"abc123"}},
"ip_interfaces":[{"name":"lif1", "ip":{"address":"10.10.10.7",
"netmask": "255.255.255.0"},
"location":{"broadcast_domain":{"name":"bd1"},
"home_node":{"name":"node1"}}, "service_policy": "default-
management"}],"routes": [{"destination": {"address": "0.0.0.0",
"netmask": "0"}, "gateway": "10.10.10.7"}],
"dns":{"domains":["abc.def.com", "def.com"],
"servers":["10.224.223.130", "10.224.223.131"]}}'
```

- Creates an SVM with an S3 server enabled and configured.

```
POST "/api/svm/svms" '{"name":"svm5", "s3":{"name":"s3-server-1",
"enabled":true, "allowed":true, "is_http_enabled": true,
"is_https_enabled":false}}'
```

- Creates an SVM and disallows NVMe service for the SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "nvme":{"allowed":"false"}}'
```

- Creates an SVM, allows and configures the NFS service for the SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "nfs":{"allowed":"true",
"enabled":true}}'
```

- Create an SVM and set the max volume limit for the SVM.

```
POST "/api/svm/svms/" '{"name":"testVs", "max_volumes":"200"}'
```

- Creates an SVM and disallows the NDMP service for the SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "ndmp":{"allowed":"false"}}'
```

- Creates an SVM and specifies whether file system analytics is enabled on all newly created volumes in the SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "auto_enable_analytics":true}}'
```

- Creates an SVM and specifies whether volume_activity_tracking is enabled on all newly created volumes in the SVM.

```
POST "/api/svm/svms" '{"name":"testVs",
"auto_enable_activity_tracking":true}}'
```

- Creates an SVM and specifies whether file system analytics is enabled on all newly created volumes in the SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "auto_enable_analytics":true}}'
```

- Creates an SVM and specifies the maximum storage limit for a single SVM.

```
POST "/api/svm/svms" '{"name":"testVs", "storage": {"limit":"4GB"}}'
```

- Creates an SVM and specifies at what percentage of storage capacity an alert message is sent. Default value is 90.

```
POST "/api/svm/svms" '{"name":"testVs", "storage": {"limit":"20GB",
"limit_threshold_alert":"95"}}'
```

- Creates an SVM and specifies the QoS policy group template to be assigned to the SVM.

```
POST "/api/svm/svms" '{"name":"testVs",
"qos_policy_group_template":{"name":"performance-fixed"}}'
```

- Creates an SVM and specifies the QoS adaptive policy group template to be assigned to the SVM.

```
POST "/api/svm/svms" '{"name":"testVs",
"qos_adaptive_policy_group_template":{"name":"performance"}}'
```

Learn more

- DOC /svm/svms

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.

Name	Type	Description
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
cifs	cifs	
comment	string	Comment
dns	dns	
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM
ipspace	ipspace	Either the UUID or name may be supplied on input.
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.

Name	Type	Description
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
ldap	ldap	
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nis	nis	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
routes	array[network_route_for_svm]	Optional array of routes for the SVM
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
storage	storage	
subtype	string	SVM subtype. The SVM subtype sync_destination is created automatically when an SVM of subtype sync_source is created on the source MetroCluster cluster. A POST request with sync_destination as SVM subtype is invalid.
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.
uuid	string	The unique identifier of the SVM.

Example request


```
{
  "aggregates": [
    {
      "available_size": 10156560384,
      "name": "aggr1",
      "snaplock_type": "string",
      "state": "string",
      "type": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "anti_ransomware_auto_switch_minimum_incoming_data": "string",
  "anti_ransomware_default_volume_state": "string",
  "anti_ransomware_incoming_write_threshold": "string",
  "anti_ransomware_incoming_write_threshold_percent": "string",
  "cifs": {
    "ad_domain": {
      "default_site": "string",
      "fqdn": "example.com",
      "organizational_unit": "string",
      "password": "string",
      "user": "string"
    },
    "auth-style": "domain",
    "domain_workgroup": "string",
    "name": "CIFS1",
    "workgroup": "workgrp1"
  },
  "comment": "string",
  "dns": {
    "domains": [
      "example.com",
      "example2.example3.com"
    ],
    "servers": [
      "10.224.65.20",
      "2001:db08:a0b:12f0::1"
    ]
  },
  "fc_interfaces": [
    {
      "data_protocol": "string",
      "location": {
        "port": {
```

```
          "name": "0a",
          "node": {
            "name": "node1"
          },
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "ip_interfaces": [
    {
      "ip": {
        "address": "10.10.10.7",
        "netmask": "24"
      },
      "location": {
        "broadcast_domain": {
          "name": "bd1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "home_node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "home_port": {
          "name": "e1b",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "name": "lif1",
      "service_policy": "string",
      "services": [
        "data_nfs"
      ],
      "subnet": {
        "name": "subnet1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
  },
  "language": "c.utf_8",
  "ldap": {
    "ad_domain": "string",
    "base_dn": "string",
    "bind_dn": "string",
    "servers": [
      "string"
    ]
  },
  "max_volumes": "string",
  "name": "svm1",
  "nis": {
    "domain": "string",
    "servers": [
      "string"
    ]
  },
  "nsswitch": {
    "group": [
      "string"
    ],
    "hosts": [
      "string"
    ],
    "namemap": [
      "string"
    ],
    "netgroup": [
      "string"
    ],
    "passwd": [
      "string"
    ]
  },
  "number_of_volumes_in_recovery_queue": 0,
  "qos_adaptive_policy_group_template": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
```

```
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qos_policy_group_template": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "routes": [
    {
      "destination": {
        "address": "10.10.10.7",
```

```
          "netmask": "24"
        },
        "gateway": "10.1.1.1"
      }
    ],
    "s3": {
      "certificate": {
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "default_unix_user": "string",
      "default_win_user": "string",
      "name": "s3-server-1"
    },
    "snapmirror": {
      "protected_consistency_group_count": 0,
      "protected_volumes_count": 0
    },
    "snapshot_policy": {
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "storage": {
      "allocated": 0,
      "available": 0,
      "used_percentage": 0
    },
    "subtype": "string",
    "total_volume_size_in_recovery_queue": 0,
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
2621580	Cannot specify options other than SVM name, comment and ipspace for a Vserver that is being configured as the destination for SVM DR.
2621634	"sync-source" SVM can only be created in a MetroCluster configuration.
2621657	"sync-destination" SVM can only be created by the system.
13434884	Cannot create an SVM because of incorrect fields.
13434885	Non-UTF8 language(s) not supported.
13434888	IPspace UUID and IPspace name mismatch.
13434889	Internal Error. Wait and retry.
13434894	Maximum allowed SVM jobs exceeded. Wait for the existing SVM jobs to complete and try again.
13434908	Invalid SVM name. The name is already in use by another SVM, IPSpace or cluster.

Error codes	Description
13434909	Internal Error. Failed to identify the aggregate to host SVM root volume.
13434910	Internal Error. Failed to allocate new SVM ID.
13434911	Invalid SVM name. Maximum supported length is 41 if SVM is of type \"sync-source\", otherwise 47.
13434912	Failed to find IPspace.
13434913	Internal error: Failed to check if an SVM create operation is in progress. Contact technical support for assistance.
13434914	Request to create the root volume of the SVM failed because there is not enough space in specified aggregate.
13434915	Failed to unlock the SVM because SVM create or delete job is in progress. Wait a few minutes, and then try the command again.
13434916	SVM is in the process of being created. Wait a few minutes, and then try the command again.
13434917	SVM creation successful.
13434918	IPspace name not provided for creating an SVM.
458753	Destination and gateway must belong to the same address family.
23724038	Invalid source for the provided ns-switch database.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Name	Type	Description
available_size	integer	Space available, in bytes.
name	string	
snaplock_type	string	SnapLock type.
state	string	Aggregate state.
type	string	Type of aggregate.
uuid	string	

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

arw_vserver

Anti-ransomware related information for the SVM.

Name	Type	Description
event_log	event_log	

certificate

Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server.
password	string	The account password used to add this CIFS server to the Active Directory. This is not audited. Valid in POST only.
user	string	The user account used to add this CIFS server to the Active Directory. Valid in POST only.

cifs

Name	Type	Description
ad_domain	ad_domain	
allowed	boolean	If this is set to true, an SVM administrator can manage the CIFS service. If it is false, only the cluster administrator can manage the service.
auth-style	string	Authentication type.

Name	Type	Description
domain_workgroup	string	The NetBIOS name of the domain or workgroup associated with the CIFS server.
enabled	boolean	If allowed, setting to true enables the CIFS service.
name	string	The NetBIOS name of the CIFS server.
workgroup	string	The workgroup name.

dns

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".

Name	Type	Description
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc_port_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the Fibre Channel interface is defined by the location of its port.

Name	Type	Description
port	fc_port_reference	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

fc_interface_svm

Name	Type	Description
data_protocol	string	The data protocol for which the Fibre Channel interface is configured.

Name	Type	Description
location	location	The location of the Fibre Channel interface is defined by the location of its port.
name	string	The name of the Fibre Channel interface.
uuid	string	The unique identifier of the Fibre Channel interface.

fcp

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the FCP service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the FCP service.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0).

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
name	string	
uuid	string	

port_svm

Name	Type	Description
name	string	
uuid	string	

location

Home_node is optional.

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name.
home_node	home_node	
home_port	port_svm	

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

ip_interface_svm

Interface parameters. Name and home_node are optional.

Name	Type	Description
ip	ip	IP information
location	location	Home_node is optional.

Name	Type	Description
name	string	The name of the interface (optional).
service_policy	string	Built-in service policies for SVMs.
services	array[string]	The services associated with the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Either the UUID or name may be supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

iscsi

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the iSCSI service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the iSCSI service.

ldap

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST.
base_dn	string	Specifies the default base DN for all searches.
bind_dn	string	Specifies the user that binds to the LDAP servers. SVM API supports anonymous binding. For Simple and SASL LDAP binding, use the LDAP API endpoint.
enabled	boolean	Enable LDAP? Setting to true creates a configuration if not already created.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
servers	array[string]	

ndmp

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NDMP service. If it is false, only the cluster administrator can manage the service.

nfs

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NFS service. If it is false, only the cluster administrator can manage the service.

Name	Type	Description
enabled	boolean	If allowed, setting to true enables the NFS service.

nis

Name	Type	Description
domain	string	The NIS domain to which this configuration belongs.
enabled	boolean	Enable NIS? Setting to true creates a configuration if not already created.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

nsswitch

Name service switch configuration

Name	Type	Description
group	array[string]	Group sources
hosts	array[string]	Host sources
namemap	array[string]	NameMap sources
netgroup	array[string]	NetGroup sources
passwd	array[string]	Password sources

nvme

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NVMe service. If it is false, only the cluster administrator can manage the service.

Name	Type	Description
enabled	boolean	If allowed, setting to true enables the NVMe service.

qos_adaptive_policy_group_template

This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy

This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy_group_template

This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

network_route_for_svm

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

s3

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
default_unix_user	string	Specifies the default UNIX user for NAS Access.

Name	Type	Description
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether or not to enable S3. Setting this value to true creates a service if one is not yet created.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server. By default, HTTPS is enabled on the S3 server.
name	string	Specifies the name of the S3 server. A server name length can range from 1 to 253 characters and can only contain the following combination of characters 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443.

snapmirror

Specifies attributes for SVM DR protection.

Name	Type	Description
is_protected	boolean	Specifies whether the SVM is a SnapMirror source SVM, using SnapMirror to protect its data.
protected_consistency_group_count	integer	Specifies the number of SVM DR protected consistency groups in the SVM.

Name	Type	Description
protected_volumes_count	integer	Specifies the number of SVM DR protected volumes in the SVM.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage

Name	Type	Description
allocated	integer	Total size of the volumes in SVM, in bytes.
available	integer	Currently available storage capacity in SVM, in bytes.
limit	integer	Maximum storage permitted on a single SVM, in bytes.
limit_threshold_alert	integer	Indicates at what percentage of storage capacity an alert message is sent. The default value is 90.
limit_threshold_exceeded	boolean	Indicates whether the total storage capacity exceeds the alert percentage.
used_percentage	integer	The percentage of storage capacity used.

svm

Name	Type	Description
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.

Name	Type	Description
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
cifs	cifs	
comment	string	Comment
dns	dns	
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM
ipspace	ipspace	Either the UUID or name may be supplied on input.
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.

Name	Type	Description
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
ldap	ldap	
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nis	nis	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.

Name	Type	Description
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
routes	array[network_route_for_svm]	Optional array of routes for the SVM
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
storage	storage	
subtype	string	SVM subtype. The SVM subtype sync_destination is created automatically when an SVM of subtype sync_source is created on the source MetroCluster cluster. A POST request with sync_destination as SVM subtype is invalid.
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.

Name	Type	Description
uuid	string	The unique identifier of the SVM.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an SVM

DELETE `/svm/svms/{uuid}`

Introduced In: 9.6

Deletes an SVM. As a prerequisite, SVM objects must be deleted first. SnapMirror relationships must be deleted and data volumes must be offline and deleted.

- The number of parallel SVMs that can be created must not be greater than five.
- If a sixth SVM POST request is issued, the following error message is generated: "Maximum allowed SVM jobs exceeded. Wait for the existing SVM jobs to complete and try again."

Related ONTAP commands

- `vserver delete`

Example

Deleting an individual SVM in the cluster.

```
DELETE "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
```

Learn more

- DOC /svm/svms

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Filter by UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
13434894	Maximum allowed SVM jobs exceeded. Wait and retry.
2621525	SVM cannot be deleted as it is associated with an Active Directory configured CIFS server. Delete the CIFS server using "cifs delete" and retry the operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SVM properties

GET `/svm/svms/{uuid}`

Introduced In: 9.6

Retrieves the properties for an individual SVM. This includes protocol configurations such as CIFS and NFS, export policies, name service configurations, and network services.

Important notes

- The SVM object includes a large set of fields and can be expensive to retrieve.
- REST APIs only expose a data SVM as an SVM.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `snapmirror.*`

Example

Retrieving an individual SVM in the cluster

```
GET "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
```

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Filter by UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.

Name	Type	Description
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
certificate	certificate	Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.
cifs	cifs	
comment	string	Comment
dns	dns	
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM
ipspace	ipspace	Either the UUID or name may be supplied on input.

Name	Type	Description
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
ldap	ldap	
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nis	nis	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.

Name	Type	Description
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.
qos_policy	qos_policy	This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
state	string	SVM State
storage	storage	
subtype	string	SVM subtype. The SVM subtype sync_destination is created automatically when an SVM of subtype sync_source is created on the source MetroCluster cluster. A POST request with sync_destination as SVM subtype is invalid.

Name	Type	Description
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.
uuid	string	The unique identifier of the SVM.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "aggregates": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "available_size": 10156560384,
      "name": "aggr1",
      "snaplock_type": "string",
      "state": "string",
      "type": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "anti_ransomware_auto_switch_minimum_incoming_data": "string",
  "anti_ransomware_default_volume_state": "string",
  "anti_ransomware_incoming_write_threshold": "string",
  "anti_ransomware_incoming_write_threshold_percent": "string",
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cifs": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ad_domain": {
      "default_site": "string",
      "fqdn": "example.com",
      "organizational_unit": "string"
```

```
      },
      "auth-style": "domain",
      "domain_workgroup": "string",
      "name": "CIFS1",
      "workgroup": "workgrp1"
    },
    "comment": "string",
    "dns": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "domains": [
        "example.com",
        "example2.example3.com"
      ],
      "servers": [
        "10.224.65.20",
        "2001:db08:a0b:12f0::1"
      ]
    },
    "fc_interfaces": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "data_protocol": "string",
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "fcp": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    },
    "ip_interfaces": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "services": [
        "data_nfs"
      ],
      "subnet": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "subnet1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "iscsi": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "language": "c.utf_8",
  "ldap": {
    "ad_domain": "string",
    "base_dn": "string",
    "bind_dn": "string",
    "servers": [
      "string"
    ]
  },
```

```
  "max_volumes": "string",
  "name": "svm1",
  "nfs": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "nis": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "domain": "string",
    "servers": [
      "string"
    ]
  },
  "nsswitch": {
    "group": [
      "string"
    ],
    "hosts": [
      "string"
    ],
    "namemap": [
      "string"
    ],
    "netgroup": [
      "string"
    ],
    "passwd": [
      "string"
    ]
  },
  "number_of_volumes_in_recovery_queue": 0,
  "nvme": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "qos_adaptive_policy_group_template": {
```

```
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qos_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
```

```
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qos_policy_group_template": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
```

```
  "s3": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "certificate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "default_unix_user": "string",
    "default_win_user": "string",
    "name": "s3-server-1"
  },
  "snapmirror": {
    "protected_consistency_group_count": 0,
    "protected_volumes_count": 0
  },
  "snapshot_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "running",
  "storage": {
    "allocated": 0,
    "available": 0,
    "used_percentage": 0
  },
  "subtype": "string",
  "total_volume_size_in_recovery_queue": 0,
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
262188	Field "top_metric" was specified twice (to "iops.read" and "throughput.read").

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregates

Name	Type	Description
_links	_links	
available_size	integer	Space available, in bytes.
name	string	
snaplock_type	string	SnapLock type.
state	string	Aggregate state.
type	string	Type of aggregate.
uuid	string	

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

arw_vserver

Anti-ransomware related information for the SVM.

Name	Type	Description
event_log	event_log	

certificate

Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.
fqdn	string	The fully qualified domain name of the Windows Active Directory to which this CIFS server belongs. A CIFS server appears as a member of Windows server object in the Active Directory store.
organizational_unit	string	Specifies the organizational unit within the Active Directory domain to associate with the CIFS server.

cifs

Name	Type	Description
_links	_links	
ad_domain	ad_domain	
allowed	boolean	If this is set to true, an SVM administrator can manage the CIFS service. If it is false, only the cluster administrator can manage the service.
auth-style	string	Authentication type.
domain_workgroup	string	The NetBIOS name of the domain or workgroup associated with the CIFS server.

Name	Type	Description
enabled	boolean	If allowed, setting to true enables the CIFS service.
name	string	The NetBIOS name of the CIFS server.
workgroup	string	The workgroup name.

dns

Name	Type	Description
_links	_links	
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc_port_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	_links	
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the Fibre Channel interface is defined by the location of its port.

Name	Type	Description
port	fc_port_reference	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

fc_interface_svm

Name	Type	Description
_links	_links	
data_protocol	string	The data protocol for which the Fibre Channel interface is configured.
name	string	The name of the Fibre Channel interface.

Name	Type	Description
uuid	string	The unique identifier of the Fibre Channel interface.

fcp

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the FCP service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the FCP service.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
_links	_links	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port_svm

Name	Type	Description
_links	_links	
name	string	
uuid	string	

location

Home_node is optional.

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name.
home_node	home_node	
home_port	port_svm	

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
_links	_links	
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

ip_interface_svm

Interface parameters. Name and home_node are optional.

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface (optional).

Name	Type	Description
services	array[string]	The services associated with the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

iscsi

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the iSCSI service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the iSCSI service.

ldap

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST.
base_dn	string	Specifies the default base DN for all searches.
bind_dn	string	Specifies the user that binds to the LDAP servers. SVM API supports anonymous binding. For Simple and SASL LDAP binding, use the LDAP API endpoint.
enabled	boolean	Enable LDAP? Setting to true creates a configuration if not already created.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
servers	array[string]	

ndmp

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NDMP service. If it is false, only the cluster administrator can manage the service.

nfs

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the NFS service. If it is false, only the cluster administrator can manage the service.

Name	Type	Description
enabled	boolean	If allowed, setting to true enables the NFS service.

nis

Name	Type	Description
_links	_links	
domain	string	The NIS domain to which this configuration belongs.
enabled	boolean	Enable NIS? Setting to true creates a configuration if not already created.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

nsswitch

Name service switch configuration

Name	Type	Description
group	array[string]	Group sources
hosts	array[string]	Host sources
namemap	array[string]	NameMap sources
netgroup	array[string]	NetGroup sources
passwd	array[string]	Password sources

nvme

Available for GET, POST, and PATCH requests.

Name	Type	Description
_links	_links	

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NVMe service. If it is false, only the cluster administrator can manage the service.
enabled	boolean	If allowed, setting to true enables the NVMe service.

qos_adaptive_policy_group_template

This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
_links	_links	
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy

This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.

Name	Type	Description
_links	_links	
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy_group_template

This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).

Name	Type	Description
_links	_links	
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

network_route_for_svm

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

s3

Name	Type	Description
_links	_links	
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service.
certificate	certificate	Specifies the certificate that will be used for creating HTTPS connections to the S3 server.
default_unix_user	string	Specifies the default UNIX user for NAS Access.
default_win_user	string	Specifies the default Windows user for NAS Access.
enabled	boolean	Specifies whether or not to enable S3. Setting this value to true creates a service if one is not yet created.
is_http_enabled	boolean	Specifies whether HTTP is enabled on the S3 server. By default, HTTP is disabled on the S3 server.
is_https_enabled	boolean	Specifies whether HTTPS is enabled on the S3 server. By default, HTTPS is enabled on the S3 server.
name	string	Specifies the name of the S3 server. A server name length can range from 1 to 253 characters and can only contain the following combination of characters 0-9, A-Z, a-z, ".", and "-".
port	integer	Specifies the HTTP listener port for the S3 server. By default, HTTP is enabled on port 80.
secure_port	integer	Specifies the HTTPS listener port for the S3 server. By default, HTTPS is enabled on port 443.

snapmirror

Specifies attributes for SVM DR protection.

Name	Type	Description
is_protected	boolean	Specifies whether the SVM is a SnapMirror source SVM, using SnapMirror to protect its data.
protected_consistency_group_count	integer	Specifies the number of SVM DR protected consistency groups in the SVM.
protected_volumes_count	integer	Specifies the number of SVM DR protected volumes in the SVM.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage

Name	Type	Description
allocated	integer	Total size of the volumes in SVM, in bytes.
available	integer	Currently available storage capacity in SVM, in bytes.
limit	integer	Maximum storage permitted on a single SVM, in bytes.
limit_threshold_alert	integer	Indicates at what percentage of storage capacity an alert message is sent. The default value is 90.
limit_threshold_exceeded	boolean	Indicates whether the total storage capacity exceeds the alert percentage.

Name	Type	Description
used_percentage	integer	The percentage of storage capacity used.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update SVM properties

PATCH `/svm/svms/{uuid}`

Introduced In: 9.6

Updates one or more of the following properties of an individual SVM: SVM name, SVM default volume language code, SVM comment, and SVM state.

Related ONTAP commands

- `vserver modify`
- `vserver rename`
- `vserver start`
- `vserver stop`
- `security ssl modify`
- `vserver add-protocols`
- `vserver remove-protocols`

Examples

1. Stops an SVM and updates the "comment" field for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"state":"stopped", "comment":"This SVM is stopped."}'
```

1. Starts an SVM and updates the "comment" field for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"state":"running", "comment":"This SVM is running."}'
```

1. Updates the "language" field for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"language":"en.UTF-8"}'
```

1. Updates the "name" field for an SVM or renames the SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"name":"svm_new"}'
```

1. Updates the aggregates for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"aggregates":["{"name":aggr1"},{"name":"aggr2"},{"name":"aggr3"}]}'
```

1. Updates the snapshot policy for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"snapshot_policy":{"name":"custom1"}}'
```

1. Updates the TLS certificate for an individual SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"certificate":{"uuid":"1cd8a442-86d1-11e0-ae1c-123478563412"}}'
```

1. Updates the QoS policy for the SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"qos_policy_group":{"name":"qpolicy1"}}'
```

1. Allows NFS protocol which was previously disallowed for the SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"nfs":{"allowed":"true"}}'
```

1. Updates the max volume limit for the SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"max_volumes":"200"}'
```

1. Updates whether file system analytics is enabled on all newly created volumes in the SVM.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"auto_enable_analytics":"true"}'
```

1. Updates whether volume activity tracking is enabled on all newly created volumes in the SVM.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"auto_enable_activity_tracking":"true"}'
```

1. Updates the QoS adaptive policy group template for the SVM.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"qos_adaptive_policy_group_template":{"name":"aqpolicy1"}}'
```

1. Updates the maximum storage permitted on a single SVM.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"storage":{"limit":"40GB"}}'
```

1. Updates the percentage of storage capacity at which an alert message is sent.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"storage":{"limit":"400MB", "limit_threshold_alert":"98"}}'
```

1. Updates the QoS policy group template for the SVM.

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"qos_policy_group_template":{"name":"policy1"}}'
```

1. Updates the S3 protocol that was previously disallowed for the SVM

```
  PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"s3":{"allowed":"true"}}'
```

Learn more

- DOC /svm/svms

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Filter by UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.

Name	Type	Description
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
certificate	certificate	Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.
cifs	cifs	
comment	string	Comment
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.

Name	Type	Description
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
qos_policy	qos_policy	This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
state	string	SVM State
storage	storage	
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.
uuid	string	The unique identifier of the SVM.

Example request

```
{
  "aggregates": [
    {
      "available_size": 10156560384,
      "name": "aggr1",
      "snaplock_type": "string",
      "state": "string",
      "type": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "anti_ransomware_auto_switch_minimum_incoming_data": "string",
  "anti_ransomware_default_volume_state": "string",
  "anti_ransomware_incoming_write_threshold": "string",
  "anti_ransomware_incoming_write_threshold_percent": "string",
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cifs": {
    "auth-style": "domain",
    "domain_workgroup": "string",
    "enabled": true,
    "workgroup": "workgrp1"
  },
  "comment": "string",
  "fc_interfaces": [
    {
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "fcp": {
    "enabled": true
  },
  "ip_interfaces": [
    {
      "services": [
        "data_nfs"
      ],
      "subnet": {
        "name": "subnet1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
      }
    ],
    "iscsi": {
      "enabled": true
    },
    "language": "c.utf_8",
    "max_volumes": "string",
    "name": "svm1",
    "nfs": {
      "enabled": true
    },
    "nsswitch": {
      "group": [
        "string"
      ],
      "hosts": [
        "string"
      ],
      "namemap": [
        "string"
      ],
      "netgroup": [
        "string"
      ],
      "passwd": [
        "string"
      ]
    },
    "number_of_volumes_in_recovery_queue": 0,
    "nvme": {
      "enabled": true
    },
    "qos_adaptive_policy_group_template": {
      "max_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
```

```
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qos_policy_group_template": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
```

```
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "s3": {
    "enabled": true,
    "is_http_enabled": true,
    "is_https_enabled": true
  },
  "snapmirror": {
    "protected_consistency_group_count": 0,
    "protected_volumes_count": 0
  },
  "snapshot_policy": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "running",
  "storage": {
    "allocated": 0,
    "available": 0,
    "used_percentage": 0
  },
  "total_volume_size_in_recovery_queue": 0,
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
}
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error codes	Description
13434880	Failed to modify SVM parameters.
13434881	Failed to rename SVM.
13434883	SVM parameters except name modified successfully.
13434885	Non-UTF8 language(s) not supported.
13434886	Invalid snapshot policy.
13434902	Modification of NSSwitch parameters failed for the SVM.
13434906	Operation not supported for an SVM of type sync-destination.
12451843	Certificate does not exist.
13434908	Invalid SVM name. The name is already in use by another SVM, IPSpace or cluster.
13434916	SVM is in the process of being created. Wait a few minutes, and then try the command again.
13434915	Failed to unlock the SVM because SVM create or delete job is in progress. Wait a few minutes, and then try the command again.

Error codes	Description
13434911	Invalid SVM name. Maximum supported length is 41 if SVM is of type \"sync-source\", otherwise 47.
262179	Unexpected argument "storage_limit".
23724038	Invalid source for the provided ns-switch database.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Name	Type	Description
available_size	integer	Space available, in bytes.
name	string	
snaplock_type	string	SnapLock type.
state	string	Aggregate state.
type	string	Type of aggregate.
uuid	string	

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

arw_vserver

Anti-ransomware related information for the SVM.

Name	Type	Description
event_log	event_log	

certificate

Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

ad_domain

Name	Type	Description
default_site	string	The default site used by LIFs that do not have a site membership.

cifs

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the CIFS service. If it is false, only the cluster administrator can manage the service.
auth-style	string	Authentication type.
domain_workgroup	string	The NetBIOS name of the domain or workgroup associated with the CIFS server.
workgroup	string	The workgroup name.

dns

Name	Type	Description
domains	array[string]	A list of DNS domains. Domain names have the following requirements: • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names:"all", "local", and "localhost".
servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc_port_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
name	string	The name of the FC port.
node	node	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

location

The location of the Fibre Channel interface is defined by the location of its port.

Name	Type	Description
port	fc_port_reference	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

fc_interface_svm

Name	Type	Description
uuid	string	The unique identifier of the Fibre Channel interface.

fcp

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the FCP service. If it is false, only the cluster administrator can manage the service.

ip

IP information

broadcast_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home_node

Name	Type	Description
name	string	
uuid	string	

port_svm

Name	Type	Description
name	string	
uuid	string	

location

Home_node is optional.

Name	Type	Description
broadcast_domain	broadcast_domain	Broadcast domain UUID along with a readable name.
home_node	home_node	
home_port	port_svm	

ip_subnet_reference

A named subnet. Either UUID or name can be supplied on input.

Name	Type	Description
name	string	The name of the subnet. If only the name is provided, the IPspace scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the subnet.

ip_interface_svm

Interface parameters. Name and home_node are optional.

Name	Type	Description
ip	ip	IP information
services	array[string]	The services associated with the interface.
subnet	ip_subnet_reference	A named subnet. Either UUID or name can be supplied on input.
uuid	string	The UUID that uniquely identifies the interface.

ipspace

Either the UUID or name may be supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

iscsi

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the iSCSI service. If it is false, only the cluster administrator can manage the service.

ldap

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST.

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
bind_dn	string	Specifies the user that binds to the LDAP servers. SVM API supports anonymous binding. For Simple and SASL LDAP binding, use the LDAP API endpoint.
enabled	boolean	Enable LDAP? Setting to true creates a configuration if not already created.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
servers	array[string]	

ndmp

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NDMP service. If it is false, only the cluster administrator can manage the service.

nfs

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NFS service. If it is false, only the cluster administrator can manage the service.

nis

Name	Type	Description
domain	string	The NIS domain to which this configuration belongs.

Name	Type	Description
enabled	boolean	Enable NIS? Setting to true creates a configuration if not already created.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

nsswitch

Name service switch configuration

Name	Type	Description
group	array[string]	Group sources
hosts	array[string]	Host sources
namemap	array[string]	NameMap sources
netgroup	array[string]	NetGroup sources
passwd	array[string]	Password sources

nvme

Available for GET, POST, and PATCH requests.

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the NVMe service. If it is false, only the cluster administrator can manage the service.

qos_adaptive_policy_group_template

This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy

This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos_policy_group_template

This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

ip_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.

network_route_for_svm

Name	Type	Description
destination	ip_info	IP information
gateway	string	The IP address of the gateway router leading to the destination.

certificate

Specifies the certificate that will be used for creating HTTPS connections to the S3 server.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

s3

Name	Type	Description
allowed	boolean	If this is set to true, an SVM administrator can manage the S3 service. If it is false, only the cluster administrator can manage the service.

snapmirror

Specifies attributes for SVM DR protection.

Name	Type	Description
is_protected	boolean	Specifies whether the SVM is a SnapMirror source SVM, using SnapMirror to protect its data.
protected_consistency_group_count	integer	Specifies the number of SVM DR protected consistency groups in the SVM.
protected_volumes_count	integer	Specifies the number of SVM DR protected volumes in the SVM.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

storage

Name	Type	Description
allocated	integer	Total size of the volumes in SVM, in bytes.
available	integer	Currently available storage capacity in SVM, in bytes.
limit	integer	Maximum storage permitted on a single SVM, in bytes.
limit_threshold_alert	integer	Indicates at what percentage of storage capacity an alert message is sent. The default value is 90.
limit_threshold_exceeded	boolean	Indicates whether the total storage capacity exceeds the alert percentage.
used_percentage	integer	The percentage of storage capacity used.

svm

Name	Type	Description
aggregates	array[aggregates]	List of allowed aggregates for SVM volumes. An administrator is allowed to create volumes on these aggregates.
aggregates_delegated	boolean	This property is true when the administrator has delegated the aggregates for the SVM volumes.
anti_ransomware	arw_vserver	Anti-ransomware related information for the SVM.

Name	Type	Description
anti_ransomware_auto_switch_duration_without_new_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that no new file-extensions are observed in the volume in recent time. This parameter optionally specifies the recent time duration (in days) to be considered during which no new file-extension should be observed in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_from_learning_to_enabled	boolean	This property specifies whether anti-ransomware state of the volumes in this SVM are automatically switched by the system from “learning” (dry-run) to “enabled” (active) state after sufficient learning.
anti_ransomware_auto_switch_minimum_file_count	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have a minimum file count in “learning” state. This parameter optionally specifies the minimum number of newly created files in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_auto_switch_minimum_file_extension	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have minimum number of file extensions in “learning” state. This parameter optionally specifies the minimum number of new file extensions in “learning” state in a given volume to automatically switch the anti-ransomware state from “learning” to “enabled”.
anti_ransomware_auto_switch_minimum_incoming_data	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
anti_ransomware_auto_switch_minimum_learning_period	integer	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should be in “learning” state for sufficient time period. This parameter optionally specifies the minimum number of days a given volume should be in “learning” state to automatically switch the anti-ransomware state from “learning” to “enabled”.

Name	Type	Description
anti_ransomware_default_volume_state	string	Specifies the default Anti-ransomware state of the volumes in the SVM. Default "anti_ransomware_default_volume_state" property is disabled for POST operation. If this value is "disabled", Anti-ransomware protection is disabled by default on the new volumes that are created in the SVM. If this value is "dry_run", Anti-ransomware protection is in learning mode by default on the new volumes that are created in the SVM. When the Anti-ransomware license is not present, this property is ignored and volumes will be created with the "disabled" state.
anti_ransomware_incoming_write_threshold	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in GB) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion. This field is no longer supported.

Name	Type	Description
anti_ransomware_incoming_write_threshold_percent	string	One of the many conditions to be satisfied to automatically switch the anti-ransomware state of the volumes in this SVM from “learning” (dry-run) to “enabled” is that the volume should have sufficient data ingested to do the learning. This parameter optionally specifies the minimum amount of data (in percentage) to be written to a given volume during the learning period to automatically switch the anti-ransomware state from “learning” to “enabled”. The amount of data considered as ingested also includes the data that is deleted or overwritten after ingestion.
auto_enable_activity_tracking	boolean	Specifies whether volume activity tracking is automatically enabled on volumes that are created in the SVM.
auto_enable_analytics	boolean	Specifies whether file system analytics is automatically enabled on volumes that are created in the SVM.
certificate	certificate	Support for this field will be removed in a future release. Please use /svm/svms/{svm.uuid}/web for this field. Certificate for incoming TLS connection requests.
cifs	cifs	
comment	string	Comment
fc_interfaces	array[fc_interface_svm]	FC Interface for the SVM
fcp	fcp	Available for GET, POST, and PATCH requests.
ip_interfaces	array[ip_interface_svm]	IP interfaces for the SVM

Name	Type	Description
is_space_enforcement_logical	boolean	Indicates whether logical space enforcement for the SVM is enabled.
is_space_reporting_logical	boolean	Indicates whether logical space reporting for the SVM is enabled.
iscsi	iscsi	Available for GET, POST, and PATCH requests.
language	string	Default volume language code. UTF-8 encoded languages are valid in POST or PATCH. Non UTF-8 language encodings are for backward compatibility and are not valid input for POST and PATCH requests.
max_volumes	string	This property is used by cluster administrator to specify the limit on maximum number of volumes allowed in the SVM. The value can be either the string "unlimited" or a number.
name	string	The name of the SVM.
ndmp	ndmp	
nfs	nfs	
nsswitch	nsswitch	Name service switch configuration
number_of_volumes_in_recovery_queue	integer	Number of volumes in the recovery queue.
nvme	nvme	Available for GET, POST, and PATCH requests.

Name	Type	Description
qos_adaptive_policy_group_template	qos_adaptive_policy_group_template	This optionally specifies which QoS adaptive policy group to apply to the SVM as a template. This policy group will then be assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs) that adjust based on the volume allocated space or used space.
qos_policy	qos_policy	This optionally specifies which QoS policy group to apply to the Vserver. This policy group defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy group is associated.
qos_policy_group_template	qos_policy_group_template	This optionally specifies which QoS non-shared policy group to apply to the SVM as a template. This policy group is then assigned to volumes created or rehosted into this SVM. This policy group defines measurable service level objectives (SLOs) and Service Level Agreements (SLAs).
s3	s3	
snapmirror	snapmirror	Specifies attributes for SVM DR protection.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
state	string	SVM State
storage	storage	
total_volume_size_in_recovery_queue	integer	Sum of the sizes of the volumes in the recovery queue.
uuid	string	The unique identifier of the SVM.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve clients

SVM svms svm.uuid top-metrics clients endpoint overview

Overview

You can use this API to retrieve a list of clients with the most I/O activity for FlexVol and FlexGroup volumes belonging to a specified SVM, within the past several seconds. To obtain this list, only the volumes which have the activity tracking feature enabled are considered.

This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` and `throughput` metrics. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API supports returning only one I/O activity type per request.

Approximate accounting and error bars

When too many clients have had recent activity, some clients may be dropped from the list. In that situation, the spread of values in the `error` field will increase indicating we have larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the clients that would have otherwise been included, may not be present in the final list returned by the API.

Enabling and disabling activity tracking feature

The following APIs can be used to enable, disable, and retrieve the activity tracking state for a FlexVol or a FlexGroup volume.

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"on"}'

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"off"}'

– GET /api/storage/volumes/{uuid}/?fields=activity_tracking

Excluded volumes list

Optionally, the API returns an excluded list of activity tracking-enabled volumes, which were not accounted for when obtaining the list of clients with the most I/O activity for the SVM. This excluded list contains both the volume information and the reason for exclusion.

Failure to return list of clients with most I/O activity

The API can sometimes fail to return the list of clients with the most I/O activity, due to the following reasons:

– The volumes belonging to the SVM do not have the activity tracking feature enabled.

– The volumes belonging to the SVM have not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of clients with the most I/O activity.

Retrieve a list of the clients with the most I/O activity

For a report on the clients with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` I/O activity type into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of clients with the greatest number of average read operations per second. The current maximum number of clients returned by the API for an I/O activity type is 25.

– GET /api/svm/svms/{svm.uuid}/top-metrics/clients

Examples

Retrieving a list of the clients with the greatest average number of write operations per second:

```
# The API:
GET /api/svm/svms/{svm.uuid}/top-metrics/clients

# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/clients?top_metric=iops.write"
```

```
# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "client_ip": "172.28.71.128"
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "client_ip": "172.28.71.179"
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
    },
    "client_ip": "172.28.51.62"
  }
],
"num_records": 3,
"excluded_volumes": [
```

```
  {
    "volume": {
      "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol10",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "resource limit exceeded",
      "code": "12345"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
      "uuid": "5bbfc227-3fd8-42c9-a651-fa6167c2cf85",
      "name": "vol22",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": "23456"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
```

```
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/clients?top_metric=iops.write"
  }
}
}
```

Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/clients?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for SVM \"vs1\" returned zero
records. Check whether the activity tracking enabled volumes belonging to
the SVM have read/write traffic. Refer to the REST API documentation for
more information on why there might be no records.",
  "code": "124519405",
},
"_links": {
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/clients?top_metric=throughput.write"
  }
}
}
```

List clients with the most I/O activity

GET `/svm/svms/{svm.uuid}/top-metrics/clients`

Introduced In: 9.11

Retrieves a list of clients with the most I/O activity.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
throughput.write	integer	query	False	Filter by throughput.write
throughput.read	integer	query	False	Filter by throughput.read
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
client_ip	string	query	False	Filter by client_ip
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.read	integer	query	False	Filter by iops.read
iops.write	integer	query	False	Filter by iops.write
svm.name	string	query	False	Filter by svm.name
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
excluded_volumes	array[top_metrics_svm_client_excluded_volume]	List of volumes that are not included in the SVM activity tracking REST API.

Name	Type	Description
notice	notice	Optional field that indicates why no records are returned by the SVM activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_svm_client]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "excluded_volumes": [
    {
      "reason": {
        "code": "111411207",
        "message": "The volume is offline."
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "notice": {
    "code": "111411207",
    "message": "The volume is offline."
  },
  "num_records": 1,
  "records": [
    {
      "client_ip": "192.168.185.170",
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 5,
        "write": 10
      },
      "svm": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "throughput": {
          "error": {
            "lower_bound": 34,
            "upper_bound": 54
          },
          "read": 12,
          "write": 2
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124519405	The activity tracking report for SVM svm.name returned zero records. Check whether the activity tracking enabled volumes belonging to the SVM have read/write traffic. Refer to the REST API documentation for more information on why there might be no records.
124519406	Failed to get the activity tracking report for SVM svm.name. Reason:<Reason for="" failure="">.</Reason>
124519407	SVM wildcard queries are not supported for activity tracking reports.
124519408	Activity tracking is not supported on SVM svm.name, because it is configured as a destination for SVM DR.
124519409	Activity tracking is not supported on SVM svm.name, because it is configured as a destination of a MetroCluster SVM relationship and the SVM admin state is stopped.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

reason

Name	Type	Description
code	string	Warning code indicating why the volume is not included in the SVM activity tracking REST API.
message	string	Details why the volume is not included in the SVM activity tracking REST API.

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_svm_client_excluded_volume

List of volumes and their details as to why they are not included in the SVM activity tracking REST API.

Name	Type	Description
reason	reason	
volume	volume	

notice

Optional field that indicates why no records are returned by the SVM activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	

Name	Type	Description
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

top_metrics_svm_client

Aggregated information about a client's IO activity at a SVM scope.

Name	Type	Description
client_ip	string	IP address of the client. Both IPv4 and IPv6 IP addresses are supported.
iops	iops	
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
throughput	throughput	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve directories

SVM svms svm.uuid top-metrics directories endpoint overview

Overview

You can use this API to retrieve a list of directories with the most I/O activity for FlexVol and FlexGroup volumes belonging to a specified SVM, within the past several seconds. To obtain this list, only the volumes which have the activity tracking feature enabled are considered.

This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` and `throughput` metrics. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API supports returning only one I/O activity type per request.

Enabling and disabling activity tracking feature

The following APIs can be used to enable, disable, and retrieve the activity tracking state for a FlexVol or a FlexGroup volume.

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"on"}'

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"off"}'

– GET /api/storage/volumes/{uuid}/?fields=activity_tracking

Excluded volumes list

Optionally, the API returns an excluded list of activity tracking-enabled volumes, which were not accounted for when obtaining the list of clients with the most I/O activity for the SVM. This excluded list contains both the volume information and the reason for exclusion.

Approximate accounting and error bars

When too many directories have recent activity, some directories might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the directories that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of directories with most I/O activity

The API can sometimes fail to return the list of directories with the most I/O activity, due to the following reasons:

– The volumes belonging to the SVM do not have the activity tracking feature enabled.

– The volumes belonging to the SVM have not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of directories with the most I/O activity.

Failure to return pathnames

The API can sometimes fail to obtain filesystem pathnames for certain directories, either due to internal transient errors or if those directories have been recently deleted.
 In such cases, instead of the pathname, the API will return "{<volume_instance_uuid>.<fileid>}" for that directory.</fileid></volume_instance_uuid>

Retrieve a list of the directories with the most I/O activity

For a report on the directories with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of directories with the greatest number of average read operations per second. The current maximum number of directories returned by the API for an I/O activity type is 25.

– GET /api/svm/svms/{svm.uuid}/top-metrics/directories

Examples

Retrieving a list of the directories with the greatest average number of read operations per second:

```
# The API:
GET /api/svm/svms/{svm.uuid}/top-metrics/directories
```

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/directories?top_metric=iops.read"

# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "path": "/vol/fv1/dir1/dir2",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef86",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef86"
          }
        }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2?return_metadata=true"
      }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
```

```
    "iops": {
      "read": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "path": "/vol/fv2/dir3/dir4",
    "junction-path": "/fv2",
    "volume": {
        "name": "fv2",
        "uuid": "11b293df-e9d7-46cc-a9ce-2df8e52ef811",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/11b293df-e9d7-46cc-a9ce-
2df8e52ef811"
          }
        }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/11b293df-e9d7-46cc-a9ce-
2df8e52ef811/files/dir3%2Fdir4"
      },
      "metadata": {
        "href": "/api/storage/volumes/11b293df-e9d7-46cc-a9ce-
2df8e52ef811/files/dir3%2Fdir4?return_metadata=true"
      }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
    },
    "path": "/vol/fv1/dir12",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
```

```
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
          }
        }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12?return_metadata=true"
      }
    }
  }
],
"num_records": 3,
"excluded_volumes": [
  {
    "volume": {
      "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol10",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 12345
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
      "uuid": "5bbfc227-3fd8-42c9-a651-fa6167c2cf85",
```

```
      "name": "vol22",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 23456
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/directories?top_metric=iops.read"
  }
}
}
```

Retrieving a list of the directories with the most read traffic, with failure to obtain pathnames

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/directories?top_metric=iops.read"

# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 1495,
      "error": {
```

```
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "path": "73b293df-e9d7-46cc-a9ce-2df8e52ef86.1232",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef86",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef86"
          }
        }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "path": "11b293df-e9d7-46cc-a9ce-2df8e52ef811.6574",
    "junction-path": "/fv2",
    "volume": {
        "name": "fv2",
        "uuid": "11b293df-e9d7-46cc-a9ce-2df8e52ef811",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/11b293df-e9d7-46cc-a9ce-
2df8e52ef811"
          }
        }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
```

```
      "read": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
    },
    "path": "73b293df-e9d7-46cc-a9ce-2df8e52ef864.7844",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
          }
        }
    }
  }
],
"num_records": 3,
"excluded_volumes": [
  {
    "volume": {
      "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol10",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 12345
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
```

```
      "uuid": "5bbfc227-3fd8-42c9-a651-fa6167c2cf85",
      "name": "vol22",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 23456
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/directories?top_metric=iops.read"
  }
}
}
```


Example showing the behavior of the API where there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/directories?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for SVM \"vs1\" returned zero
records. Check whether the activity tracking enabled volumes belonging to
the SVM have read/write traffic. Refer to the REST API documentation for
more information on why there might be no records.",
  "code": "124519405",
},
"_links": {
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/directories?top_metric=throughput.write"
  }
}
}
```

List directories with the most I/O activity

GET `/svm/svms/{svm.uuid}/top-metrics/directories`

Introduced In: 9.11

Retrieves a list of directories with the most I/O activity.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Name	Type	In	Required	Description
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
max_records_per_svm	integer	query	False	Max records per svm.
junction-path	string	query	False	Filter by junction-path
throughput.write	integer	query	False	Filter by throughput.write
throughput.read	integer	query	False	Filter by throughput.read
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
path	string	query	False	Filter by path
iops.read	integer	query	False	Filter by iops.read
iops.write	integer	query	False	Filter by iops.write
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound

Name	Type	In	Required	Description
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
svm.name	string	query	False	Filter by svm.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
excluded_volumes	array[top_metrics_svm_directory_excluded_volume]	List of volumes that are not included in the SVM activity tracking REST API.
notice	notice	Optional field that indicates why no records are returned by the SVM activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_svm_directory]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "excluded_volumes": [
    {
      "reason": {
        "code": "111411",
        "message": "The volume is offline."
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on svm."
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "metadata": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "iops": {
        "error": {
          "lower_bound": 34,
```

```
          "upper_bound": 54
        },
        "read": 10,
        "write": 5
      },
      "junction-path": "/fv",
      "path": "/vol/fv/dir_abc/dir_123/dir_20",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 3,
        "write": 20
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124519405	The activity tracking report for SVM svm.name returned zero records. Check whether the activity tracking enabled volumes belonging to the SVM have read/write traffic. Refer to the REST API documentation for more information on why there might be no records.
124519406	Failed to get the activity tracking report for SVM svm.name. Reason:<Reason for="" failure="">.</Reason>
124519407	SVM wildcard queries are not supported for activity tracking reports.
124519408	Activity tracking is not supported on SVM svm.name, because it is configured as a destination for SVM DR.
124519409	Activity tracking is not supported on SVM svm.name, because it is configured as a destination of a MetroCluster SVM relationship and the SVM admin state is stopped.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

reason

Name	Type	Description
code	string	Warning code indicating why the volume is not included in the SVM activity tracking REST API.
message	string	Details why the volume is not included in the SVM activity tracking REST API.

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_svm_directory_excluded_volume

List of volumes and their details as to why they are not included in the SVM activity tracking REST API.

Name	Type	Description
reason	reason	
volume	volume	

notice

Optional field that indicates why no records are returned by the SVM activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

_links

Name	Type	Description
metadata	href	
self	href	

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.

Name	Type	Description
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

top_metrics_svm_directory

Information about a directory's IO activity.

Name	Type	Description
_links	_links	
iops	iops	
junction-path	string	Junction path of the file.
path	string	Path of the directory.
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve files

SVM svms svm.uuid top-metrics files endpoint overview

Overview

You can use this API to retrieve a list of files with the most I/O activity for FlexVol and FlexGroup volumes belonging to a specified SVM, within the past several seconds. To obtain this list, only the volumes which have the activity tracking feature enabled are considered.

This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` and `throughput` metrics. Use the `top_metric` parameter to specify which type of I/O activity to filter for.

This API supports returning only one I/O activity type per request.

Enabling and disabling activity tracking feature

The following APIs can be used to enable, disable, and retrieve the activity tracking state for a FlexVol or a FlexGroup volume.

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"on"}'

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"off"}'

– GET /api/storage/volumes/{uuid}/?fields=activity_tracking

Excluded volumes list

Optionally, the API returns an excluded list of activity tracking-enabled volumes, which were not accounted for when obtaining the list of clients with the most I/O activity for the SVM. This excluded list contains both the volume information and the reason for exclusion.

Approximate accounting and error bars

When too many files have recent activity, some files might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the files that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of files with most I/O activity

The API can sometimes fail to return the list of files with the most I/O activity, due to the following reasons.

– The volumes belonging to the SVM do not have the activity tracking feature enabled.

– The volumes belonging to the SVM have not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of files with the most I/O activity.

Failure to return pathnames

The API can sometimes fail to obtain the filesystem pathnames for certain files, either due to internal transient errors or if those files have been recently deleted.
 In such cases, instead of the pathname, the API will return "{<volume_instance_uuid>.<fileid>}" for that file.</fileid></volume_instance_uuid>

Retrieve a list of the files with the most I/O activity

For a report on the files with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of the files with the greatest number of the average read operations per second. The current maximum number of files returned by the API for an I/O activity type is 25.

– GET /api/svm/svms/{svm.uuid}/top-metrics/files

Examples

Retrieving a list of the files with the greatest average number of write bytes received per second:

```
# The API:
GET /api/svm/svms/{svm.uuid}/top-metrics/files

# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/files?top_metric=throughput.write"

# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "throughput": {
      "write": 24,
      "error": {
        "lower_bound": 24,
        "upper_bound": 29
      }
    },
    "path": "/vol/fv1/d5/f5",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
          }
        }
    },
    "_links": {
      "metadata": {
          "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/d5%2Ff5?return_metadata=true"
      }
    }
  },
  {
```

```
    "svm": {
      "name": "vs1"
    },
    "throughput": {
      "write": 12,
      "error": {
        "lower_bound": 12,
        "upper_bound": 22
      }
    },
    "path": "/vol/fv2/d6/f6",
    "junction-path": "/fv2",
    "volume": {
        "name": "fv2",
        "uuid": "2ea74c3e-d5ca-11eb-8fbb-005056ac0f33",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/2ea74c3e-d5ca-11eb-8fbb-
005056ac0f33"
          }
        }
    },
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/2ea74c3e-d5ca-11eb-8fbb-
005056ac0f33/files/d6%2Ff6?return_metadata=true"
      }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "throughput": {
      "write": 8,
      "error": {
        "lower_bound": 8,
        "upper_bound": 10
      }
    },
    "path": "/vol/fv3/d3/f3",
    "junction-path": "/fv3",
    "volume": {
        "name": "fv3",
        "uuid": "1ca74c3e-d5ca-11eb-8fbb-005056ac0f88",
        "_links": {
```

```
          "self": {
              "href": "/api/storage/volumes/1ca74c3e-d5ca-11eb-8fbb-
005056ac0f88"
          }
        }
    },
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/1ca74c3e-d5ca-11eb-8fbb-
005056ac0f88/files/d3%2Ff3?return_metadata=true"
      }
    }
  }
],
"num_records": 3,
"excluded_volumes": [
  {
    "volume": {
      "uuid": "5bbfc224-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol1",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 12345
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
      "uuid": "5bbfc224-3fd8-42c9-a651-fa6167c2cf85",
      "name": "vol2",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf85"
```

```
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 23456
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/svm/svms/4ec6d1ea-d5da-11eb-a25f-005056ac0f77/top-
metrics/files?top_metric=throughput.write"
  }
}
}
```

Retrieving a list of the files with the most read traffic, with failure to obtain pathnames

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/files?top_metric=iops.read"

# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "path": "73b293df-e9d7-46cc-a9ce-2df8e52ef86.1232",
```

```
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef86",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef86"
          }
        }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "path": "11b293df-e9d7-46cc-a9ce-2df8e52ef811.6574",
    "junction-path": "/fv2",
    "volume": {
        "name": "fv2",
        "uuid": "11b293df-e9d7-46cc-a9ce-2df8e52ef811",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/11b293df-e9d7-46cc-a9ce-
2df8e52ef811"
          }
        }
    }
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "read": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
```

```
    },
    "path": "73b293df-e9d7-46cc-a9ce-2df8e52ef864.7844",
    "junction-path": "/fv1",
    "volume": {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
        "_links": {
          "self": {
              "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
          }
        }
    }
  }
],
"num_records": 3,
"excluded_volumes": [
  {
    "volume": {
      "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol10",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 12345
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
      "uuid": "5bbfc227-3fd8-42c9-a651-fa6167c2cf85",
      "name": "vol22",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
```

```
fa6167c2cf85"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 23456
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43/top-
metrics/files?top_metric=iops.read"
  }
}
}
```


Example showing the behavior of the API where there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/files?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for SVM \"vs1\" returned zero
records. Check whether the activity tracking enabled volumes belonging to
the SVM have read/write traffic. Refer to the REST API documentation for
more information on why there might be no records.",
  "code": "124519405",
},
"_links": {
  "self": {
    "href": "/api/svm/svms/4ec6d1ea-d5da-11eb-a25f-005056ac0f77/top-
metrics/files?top_metric=throughput.write"
  }
}
}
```

List files with the most I/O activity

GET `/svm/svms/{svm.uuid}/top-metrics/files`

Introduced In: 9.11

Retrieves a list of files with the most I/O activity.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Name	Type	In	Required	Description
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
max_records_per_svm	integer	query	False	Max records per svm.
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
throughput.read	integer	query	False	Filter by throughput.read
throughput.write	integer	query	False	Filter by throughput.write
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
junction-path	string	query	False	Filter by junction-path
svm.name	string	query	False	Filter by svm.name
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound

Name	Type	In	Required	Description
iops.write	integer	query	False	Filter by iops.write
iops.read	integer	query	False	Filter by iops.read
path	string	query	False	Filter by path
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
excluded_volumes	array[top_metrics_svm_file_excluded_volume]	List of volumes that are not included in the SVM activity tracking REST API.
notice	notice	Optional field that indicates why no records are returned by the SVM activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_svm_file]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "excluded_volumes": [
    {
      "reason": {
        "code": "111411207",
        "message": "The volume is offline."
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "notice": {
    "code": "111411207",
    "message": "The volume is offline."
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "metadata": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "iops": {
        "error": {
          "lower_bound": 34,
```

```
          "upper_bound": 54
        },
        "read": 5,
        "write": 4
      },
      "junction-path": "/fv",
      "path": "/vol/fv/dir_abc/dir_123/file_1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 2,
        "write": 20
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124519405	The activity tracking report for SVM svm.name returned zero records. Check whether the activity tracking enabled volumes belonging to the SVM have read/write traffic. Refer to the REST API documentation for more information on why there might be no records.
124519406	Failed to get the activity tracking report for SVM svm.name. Reason:<Reason for="" failure="">.</Reason>
124519407	SVM wildcard queries are not supported for activity tracking reports.
124519408	Activity tracking is not supported on SVM svm.name, because it is configured as a destination for SVM DR.
124519409	Activity tracking is not supported on SVM svm.name, because it is configured as a destination of a MetroCluster SVM relationship and the SVM admin state is stopped.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

reason

Name	Type	Description
code	string	Warning code indicating why the volume is not included in the SVM activity tracking REST API.
message	string	Details why the volume is not included in the SVM activity tracking REST API.

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_svm_file_excluded_volume

List of volumes and their details as to why they are not included in the SVM activity tracking REST API.

Name	Type	Description
reason	reason	
volume	volume	

notice

Optional field that indicates why no records are returned by the SVM activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

_links

Name	Type	Description
metadata	href	
self	href	

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.

Name	Type	Description
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

top_metrics_svm_file

Information about a file's IO activity.

Name	Type	Description
_links	_links	
iops	iops	
junction-path	string	Junction path of the file.
path	string	Path of the file.
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve users

SVM svms svm.uuid top-metrics users endpoint overview

Overview

You can use this API to retrieve a list of users with the most I/O activity for FlexVol and FlexGroup volumes belonging to a specified SVM, within the past several seconds. To obtain this list, only the volumes which have the activity tracking feature enabled are considered.

This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` and `throughput` metrics. Use the `top_metric` parameter to specify which type of I/O activity to filter for.

This API supports returning only one I/O activity type per request.

Enabling and disabling activity tracking feature

The following APIs can be used to enable, disable, and retrieve the activity tracking state for a FlexVol or a FlexGroup volume.

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"on"}'

– PATCH /api/storage/volumes/{uuid} -d '{"activity_tracking.state":"off"}'

– GET /api/storage/volumes/{uuid}/?fields=activity_tracking

Excluded volumes list

Optionally, the API returns an excluded list of activity tracking-enabled volumes, which were not accounted for when obtaining the list of clients with the most I/O activity for the SVM. This excluded list contains both the volume information and the reason for exclusion.

Approximate accounting and error bars

When too many users have recent activity, some users might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the users that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of users with most I/O activity

The API can sometimes fail to return the list of users with the most I/O activity, due to the following reasons.

– The volumes belonging to the SVM do not have the activity tracking feature enabled.

– The volumes belonging to the SVM have not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of users with the most I/O activity.

Failure to return the usernames

The API can sometimes fail to obtain the usernames for the list of userid entries, due to internal transient errors.
 In such cases, instead of the username, the API will return "{<user-id>}" for the user entry.</user-id>

Retrieve a list of the users with the most I/O activity

For a report on the users with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of the users with the greatest number of the average read operations per second. The current maximum number of users returned by the API for an I/O activity type is 25.

– GET /api/svm/svms/{svm.uuid}/top-metrics/users

Examples

Retrieving a list of the users with the greatest average number of read bytes received per second:

```
# The API:
GET /api/svm/svms/{svm.uuid}/top-metrics/users

# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/users?top_metric=throughput.read"

# The Response:
{
"records": [
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
    "user_name": "user1",
    "volumes": [
      {
        "name": "fv1",
        "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
          }
        }
      },
      {
        "name": "fv2",
        "uuid": "2ea74c3e-d5ca-11eb-8fbb-005056ac0f33",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/2ea74c3e-d5ca-11eb-8fbb-
005056ac0f33"
```

```
          }
        }
      },
      {
        "name": "fv4",
        "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
          }
        }
      }
    ]
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1002",
    "user_name": "user2",
    "volumes": [
      {
        "name": "fv2",
        "uuid": "2ea74c3e-d5ca-11eb-8fbb-005056ac0f33",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/2ea74c3e-d5ca-11eb-8fbb-
005056ac0f33"
          }
        }
      },
      {
        "name": "fv3",
        "uuid": "1ca74c3e-d5ca-11eb-8fbb-005056ac0f88",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/1ca74c3e-d5ca-11eb-8fbb-
005056ac0f88"
```

```
          }
        }
      }
    ]
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1003",
    "user_name": "user3",
    "volumes": [
      {
        "name": "fv3",
        "uuid": "1ca74c3e-d5ca-11eb-8fbb-005056ac0f88",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/1ca74c3e-d5ca-11eb-8fbb-
005056ac0f88"
          }
        }
      }
    ]
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 235,
      "error": {
        "lower_bound": 235,
        "upper_bound": 245
      }
    },
    "user_id": "1988",
    "user_name": "user4",
    "volumes": [
      {
```

```
        "name": "fv4",
        "uuid": "5bbfc226-3fd8-42c9-a651-fa6167c2cf84",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/5bbfc226-3fd8-42c9-a651-
fa6167c2cf84"
          }
        }
      }
    ]
  },
  {
    "svm": {
      "name": "vs1"
    },
    "iops": {
      "write": 235,
      "error": {
        "lower_bound": 235,
        "upper_bound": 245
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1005",
    "user_name": "user5",
    "volumes": [
      {
        "name": "fv5",
        "uuid": "5bbfc227-3fd8-42c9-a651-fa6167c2cf85",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/5bbfc227-3fd8-42c9-a651-
fa6167c2cf85"
          }
        }
      }
    ]
  }
],
"num_records": 5,
"excluded_volumes": [
  {
    "volume": {
      "uuid": "5bbfc224-3fd8-42c9-a651-fa6167c2cf84",
      "name": "vol1",
      "_links": {
        "self": {
```

```
          "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf84"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 12345
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf84"
      }
    }
  },
  {
    "volume": {
      "uuid": "5bbfc224-3fd8-42c9-a651-fa6167c2cf85",
      "name": "vol2",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf85"
        }
      }
    },
    "reason": {
      "message": "The volume is offline.",
      "code": 23456
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/5bbfc224-3fd8-42c9-a651-
fa6167c2cf85"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/svm/svms/f5516c44-3e61-11ec-9cd5-005056acae40/top-
metrics/users?top_metric=iops.write&fields=**"
  }
}
}
```

Example showing the behavior of the API where there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/{svm.uuid}/top-
metrics/users?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for SVM \"vs1\" returned zero
records. Check whether the activity tracking enabled volumes belonging to
the SVM have read/write traffic. Refer to the REST API documentation for
more information on why there might be no records.",
  "code": "124519405",
},
"_links": {
  "self": {
    "href": "/api/svm/svms/f5516c44-3e61-11ec-9cd5-005056acae40/top-
metrics/users?top_metric=throughput.write"
  }
}
}
```

List users with the most I/O activity

GET `/svm/svms/{svm.uuid}/top-metrics/users`

Introduced In: 9.11

Retrieves a list of users with the most I/O activity.

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Name	Type	In	Required	Description
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
svm.name	string	query	False	Filter by svm.name
user_id	string	query	False	Filter by user_id
iops.write	integer	query	False	Filter by iops.write
iops.read	integer	query	False	Filter by iops.read
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
user_name	string	query	False	Filter by user_name
volumes.uuid	string	query	False	Filter by volumes.uuid • Introduced in: 9.12
volumes.name	string	query	False	Filter by volumes.name • Introduced in: 9.12
throughput.write	integer	query	False	Filter by throughput.write
throughput.read	integer	query	False	Filter by throughput.read

Name	Type	In	Required	Description
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
excluded_volumes	array[top_metrics_svm_user_excluded_volume]	List of volumes that are not included in the SVM activity tracking REST API.
notice	notice	Optional field that indicates why no records are returned by the SVM activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_svm_user]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "excluded_volumes": [
    {
      "reason": {
        "code": "111411",
        "message": "The volume is offline."
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "notice": {
    "code": "111411207",
    "message": "The volume is offline."
  },
  "num_records": 1,
  "records": [
    {
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 4,
        "write": 8
      },
      "svm": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 10,
        "write": 7
      },
      "user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "user_name": "James",
      "volumes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ]
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124519405	The activity tracking report for SVM svm.name returned zero records. Check whether the activity tracking enabled volumes belonging to the SVM have read/write traffic. Refer to the REST API documentation for more information on why there might be no records.

Error Code	Description
124519406	Failed to get the activity tracking report for SVM svm.name. Reason:<Reason for="" failure="">.</Reason>
124519407	SVM wildcard queries are not supported for activity tracking reports.
124519408	Activity tracking is not supported on SVM svm.name, because it is configured as a destination for SVM DR.
124519409	Activity tracking is not supported on SVM svm.name, because it is configured as a destination of a MetroCluster SVM relationship and the SVM admin state is stopped.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

reason

Name	Type	Description
code	string	Warning code indicating why the volume is not included in the SVM activity tracking REST API.
message	string	Details why the volume is not included in the SVM activity tracking REST API.

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_svm_user_excluded_volume

List of volumes and their details as to why they are not included in the SVM activity tracking REST API.

Name	Type	Description
reason	reason	
volume	volume	

notice

Optional field that indicates why no records are returned by the SVM activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	

Name	Type	Description
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

volumes

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.8 • x-nullable: true

top_metrics_svm_user

Aggregated information about a user's IO activity at a SVM scope.

Name	Type	Description
iops	iops	
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
user_id	string	User ID of the user.
user_name	string	Name of the user.
volumes	array[volumes]	List of volumes where the user is generating traffic.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage web services security configuration

SVM svms svm.uuid web endpoint overview

You can use this API to update and retrieve the web services security configuration for each data SVM.

Updating the web services security configuration

The following fields can be used to update the web services security configuration:

- certificate.uuid
- client_enabled
- ocsp_enabled
  When updating the certificate, the certificate UUID of an existing certificate known to ONTAP must be provided. The certificate must be of type "server".

A "client-ca" certificate must be installed on ONTAP to enable "client_enabled".

Examples

Retrieving the web services security configuration

```
# API:
GET /api/svm/svms/{svm.uuid}/web

# The call:
curl -X GET "https://<mgmt-ip>/api/svm/svms/3c1b259d-5789-a2eb-9301-
10705682b34f/web" -H "accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "3c1b259d-5789-a2eb-9301-10705682b34f",
  "name": "svm2",
  "_links": {
    "self": {
      "href": "/api/svm/svms/3c1b259d-5789-a2eb-9301-10705682b34f"
    }
  }
},
"certificate": {
  "uuid": "a3bb219d-4382-1fe0-9c06-1070568ea23d",
  "name": "cert1",
  "_links": {
    "self": {
      "href": "/api/security/certificates/a3bb219d-4382-1fe0-9c06-
1070568ea23d"
    }
  }
},
"client_enabled": false,
"ocsp_enabled": false,
"_links": {
  "self": {
    "href": "/api/svm/svms/3c1b259d-5789-a2eb-9301-10705682b34f/web"
  }
}
}
```

Updating the web services security configuration

```
# The API:
PATCH /api/svm/svms/{svm.uuid}/web

# The call:
curl -X PATCH "https://<mgmt-ip>/api/svm/svms/3c1b259d-5789-a2eb-9301-
10705682b34f/web" -d '{ "certificate": {"uuid": "56da2799-13bc-2ae4-0c16-
0c71244ea2ca" }}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 28 May 2021 09:36:43 GMT
Server: libzapid-httpd
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
```

Retrieve the web services security configuration

GET `/svm/svms/{svm.uuid}/web`

Introduced In: 9.10

Retrieves the web services security configuration.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
client_enabled	boolean	Indicates whether client authentication is enabled.
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the web services security configuration

PATCH `/svm/svms/{svm.uuid}/web`

Introduced In: 9.10

Updates the web services security configuration.

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
svm.uuid	string	path	True	UUID of the SVM to which this object belongs.

Request Body

Name	Type	Description
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
client_enabled	boolean	Indicates whether client authentication is enabled.

Name	Type	Description
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "certificate": {
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
9830442	Client authentication cannot be enabled without a client ca certificate.
9830488	The certificate is not a "server" certificate.
9830489	The certificate does not exist for the given SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

web_svm

Name	Type	Description
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
client_enabled	boolean	Indicates whether client authentication is enabled.
ocsp_enabled	boolean	Indicates whether online certificate status protocol verification is enabled.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Security

Security overview

Overview

You can use ONTAP security APIs to manage security settings for the cluster and SVMs.

SAML

Configure the SAML 2.0 SP (Service Provider) protocol inside ONTAP. Doing so redirects the authentication task to a third-party Identity Provider (IDP) that can utilize any number of approaches for multi-factor authentication. After SAML authentication is enabled, all interactive web access (System Manager, SPI) is authenticated via SAML and a third-party IDP.

Manage security-related operations

Security endpoint overview

Overview

You can use this API for various cluster-wide security-related operations.

"onboard_key_manager_configurable_status" object

Use this API to retrieve details of whether or not the Onboard Key Manager can be configured on the cluster.

– GET /api/security

– GET /api/security?fields=onboard_key_manager_configurable_status

"software_data_encryption" object

Contains software data encryption related information.

The following APIs can be used to enable or disable and obtain default software data at rest encryption values:

– PATCH /api/security -d '{ "software_data_encryption.disabled_by_default" : true }'

– PATCH /api/security -d '{ "software_data_encryption.disabled_by_default" : false }'

– GET /api/security

– GET /api/security?fields=software_data_encryption

A PATCH request on this API using the parameter "software_data_encryption.conversion_enabled" triggers the conversion of all non-encrypted metadata volumes to encrypted metadata volumes and all non-NAE aggregates to NAE aggregates. For the conversion to start, the cluster must have either Onboard Key Manager or an external key manager set up and the aggregates should either be empty or have only metadata volumes. No data volumes should be present in any of the aggregates. For MetroCluster configurations, the PATCH request will fail if the cluster is in the switchover state.

The following API can be used to initiate software data encryption conversion.

– PATCH /api/security -d '{ "software_data_encryption.conversion_enabled" : true }'

"fips" object

Contains FIPS mode information.

A PATCH request on this API using the parameter "fips.enabled" switches the system from using the default cryptographic module software implementations to validated ones or vice versa, where applicable. If the value of the parameter is "true" and unapproved algorithms are configured as permitted in relevant subsystems, those algorithms will be disabled in the relevant subsystem configurations. If "false", there will be no implied change to the relevant subsystem configurations.

– GET /api/security

– GET /api/security?fields=fips

– PATCH /api/security -d '{ "fips.enabled" : true }'

– PATCH /api/security -d '{ "fips.enabled" : false }'

"tls" object

Contains TLS configuration information.

A PATCH request on this API using the parameter "tls.cipher_suites" and/or "tls.protocol_versions" configures

the permissible cipher suites and/or protocol versions for all TLS-enabled applications in the system. All protocol versions at or above the lowest version level specified are enabled, including those that are not explicitly specified.

– GET /api/security

– GET /api/security?fields=tls

– PATCH /api/security -d '{ "tls" : { "protocol_versions" : ["TLSv1.3", "TLSv1.2"], "cipher_suites" : ["TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384", "TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256"] } }'

"management_protocols" object

Contains Security Protocols information.

This security protocols endpoint is used to retrieve and configure security protocols.

– GET /api/security

– GET /api/security?fields=management_protocols

– PATCH /api/security -d '{ "management_protocols" : { "rsh_enabled" : true } }'

– PATCH /api/security -d '{ "management_protocols" : { "rsh_enabled" : false } }'

– PATCH /api/security -d '{ "management_protocols" : { "telnet_enabled" : true } }'

– PATCH /api/security -d '{ "management_protocols" : { "telnet_enabled" : false } }'

– PATCH /api/security -d '{ "management_protocols" : { "rsh_enabled" : true, "telnet_enabled" : true } }'

GET Examples

Retrieving information about the security configured on the cluster

The following example shows how to retrieve the configuration of the cluster.

```
# The API:
GET /api/security:

# The call:
curl -X GET 'https://<mgmt-ip>/api/security?fields=*' -H 'accept:
application/hal+json'

# The response:
{
"onboard_key_manager_configurable_status": {
  "supported": false,
  "message": "Onboard Key Manager cannot be configured on the cluster.
There are no self-encrypting disks in the cluster, and the following nodes
do not support volume granular encryption: ntap-vsim2.",
```

```
    "code": 65537300
  },
  "software_data_encryption": {
    "conversion_enabled": false,
    "disabled_by_default": false,
    "encryption_state": "unencrypted"
  },
  "fips": {
    "enabled": false
  },
  "tls": {
    "cipher_suites": [
      "TLS_RSA_WITH_AES_128_CCM",
      "TLS_RSA_WITH_AES_128_CCM_8",
      "TLS_RSA_WITH_AES_128_GCM_SHA256",
      "TLS_RSA_WITH_AES_128_CBC_SHA",
      "TLS_RSA_WITH_AES_128_CBC_SHA256",
      "TLS_RSA_WITH_AES_256_CCM",
      "TLS_RSA_WITH_AES_256_CCM_8",
      "TLS_RSA_WITH_AES_256_GCM_SHA384",
      "TLS_RSA_WITH_AES_256_CBC_SHA",
      "TLS_RSA_WITH_AES_256_CBC_SHA256",
      "TLS_RSA_WITH_ARIA_128_GCM_SHA256",
      "TLS_RSA_WITH_ARIA_256_GCM_SHA384",
      "TLS_RSA_WITH_CAMELLIA_128_CBC_SHA",
      "TLS_RSA_WITH_CAMELLIA_128_CBC_SHA256",
      "TLS_RSA_WITH_CAMELLIA_256_CBC_SHA",
      "TLS_RSA_WITH_CAMELLIA_256_CBC_SHA256",
      "TLS_DHE_DSS_WITH_AES_128_GCM_SHA256",
      "TLS_DHE_DSS_WITH_AES_128_CBC_SHA",
      "TLS_DHE_DSS_WITH_AES_128_CBC_SHA256",
      "TLS_DHE_DSS_WITH_AES_256_GCM_SHA384",
      "TLS_DHE_DSS_WITH_AES_256_CBC_SHA",
      "TLS_DHE_DSS_WITH_AES_256_CBC_SHA256",
      "TLS_DHE_DSS_WITH_ARIA_128_GCM_SHA256",
      "TLS_DHE_DSS_WITH_ARIA_256_GCM_SHA384",
      "TLS_DHE_DSS_WITH_CAMELLIA_128_CBC_SHA",
      "TLS_DHE_DSS_WITH_CAMELLIA_128_CBC_SHA256",
      "TLS_DHE_DSS_WITH_CAMELLIA_256_CBC_SHA",
      "TLS_DHE_DSS_WITH_CAMELLIA_256_CBC_SHA256",
      "TLS_DHE_PSK_WITH_AES_128_CBC_SHA",
      "TLS_DHE_PSK_WITH_AES_128_CBC_SHA256",
      "TLS_DHE_PSK_WITH_AES_128_CCM",
      "TLS_PSK_DHE_WITH_AES_128_CCM_8",
      "TLS_DHE_PSK_WITH_AES_128_GCM_SHA256",
      "TLS_DHE_PSK_WITH_AES_256_CBC_SHA",
```

```
    "TLS_DHE_PSK_WITH_AES_256_CBC_SHA384",
    "TLS_DHE_PSK_WITH_AES_256_CCM",
    "TLS_PSK_DHE_WITH_AES_256_CCM_8",
    "TLS_DHE_PSK_WITH_AES_256_GCM_SHA384",
    "TLS_DHE_PSK_WITH_ARIA_128_GCM_SHA256",
    "TLS_DHE_PSK_WITH_ARIA_256_GCM_SHA384",
    "TLS_DHE_PSK_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_DHE_PSK_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_DHE_PSK_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_DHE_RSA_WITH_AES_128_CCM",
    "TLS_DHE_RSA_WITH_AES_128_CCM_8",
    "TLS_DHE_RSA_WITH_AES_128_GCM_SHA256",
    "TLS_DHE_RSA_WITH_AES_128_CBC_SHA",
    "TLS_DHE_RSA_WITH_AES_128_CBC_SHA256",
    "TLS_DHE_RSA_WITH_AES_256_CCM",
    "TLS_DHE_RSA_WITH_AES_256_CCM_8",
    "TLS_DHE_RSA_WITH_AES_256_GCM_SHA384",
    "TLS_DHE_RSA_WITH_AES_256_CBC_SHA",
    "TLS_DHE_RSA_WITH_AES_256_CBC_SHA256",
    "TLS_DHE_RSA_WITH_ARIA_128_GCM_SHA256",
    "TLS_DHE_RSA_WITH_ARIA_256_GCM_SHA384",
    "TLS_DHE_RSA_WITH_CAMELLIA_128_CBC_SHA",
    "TLS_DHE_RSA_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_DHE_RSA_WITH_CAMELLIA_256_CBC_SHA",
    "TLS_DHE_RSA_WITH_CAMELLIA_256_CBC_SHA256",
    "TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_ECDHE_RSA_WITH_ARIA_128_GCM_SHA256",
    "TLS_ECDHE_RSA_WITH_ARIA_256_GCM_SHA384",
    "TLS_ECDHE_ECDSA_WITH_AES_128_CCM",
    "TLS_ECDHE_ECDSA_WITH_AES_128_CCM_8",
    "TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256",
    "TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA",
    "TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256",
    "TLS_ECDHE_ECDSA_WITH_AES_256_CCM",
    "TLS_ECDHE_ECDSA_WITH_AES_256_CCM_8",
    "TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384",
    "TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA",
    "TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384",
    "TLS_ECDHE_ECDSA_WITH_ARIA_128_GCM_SHA256",
    "TLS_ECDHE_ECDSA_WITH_ARIA_256_GCM_SHA384",
    "TLS_ECDHE_ECDSA_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_ECDHE_ECDSA_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_ECDHE_PSK_WITH_AES_128_CBC_SHA",
    "TLS_ECDHE_PSK_WITH_AES_128_CBC_SHA256",
    "TLS_ECDHE_PSK_WITH_AES_256_CBC_SHA",
```

```
    "TLS_ECDHE_PSK_WITH_AES_256_CBC_SHA384",
    "TLS_ECDHE_PSK_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_ECDHE_PSK_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_ECDHE_PSK_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256",
    "TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA",
    "TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256",
    "TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384",
    "TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA",
    "TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384",
    "TLS_ECDHE_RSA_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_ECDHE_RSA_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_PSK_WITH_AES_128_CBC_SHA",
    "TLS_PSK_WITH_AES_128_CBC_SHA256",
    "TLS_PSK_WITH_AES_128_CCM",
    "TLS_PSK_WITH_AES_128_CCM_8",
    "TLS_PSK_WITH_AES_128_GCM_SHA256",
    "TLS_PSK_WITH_AES_256_CBC_SHA",
    "TLS_PSK_WITH_AES_256_CBC_SHA384",
    "TLS_PSK_WITH_AES_256_CCM",
    "TLS_PSK_WITH_AES_256_CCM_8",
    "TLS_PSK_WITH_AES_256_GCM_SHA384",
    "TLS_PSK_WITH_ARIA_128_GCM_SHA256",
    "TLS_PSK_WITH_ARIA_256_GCM_SHA384",
    "TLS_PSK_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_PSK_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_PSK_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_RSA_PSK_WITH_AES_128_CBC_SHA",
    "TLS_RSA_PSK_WITH_AES_128_CBC_SHA256",
    "TLS_RSA_PSK_WITH_AES_128_GCM_SHA256",
    "TLS_RSA_PSK_WITH_AES_256_CBC_SHA",
    "TLS_RSA_PSK_WITH_AES_256_CBC_SHA384",
    "TLS_RSA_PSK_WITH_AES_256_GCM_SHA384",
    "TLS_RSA_PSK_WITH_ARIA_128_GCM_SHA256",
    "TLS_RSA_PSK_WITH_ARIA_256_GCM_SHA384",
    "TLS_RSA_PSK_WITH_CAMELLIA_128_CBC_SHA256",
    "TLS_RSA_PSK_WITH_CAMELLIA_256_CBC_SHA384",
    "TLS_RSA_PSK_WITH_CHACHA20_POLY1305_SHA256",
    "TLS_SRP_SHA_WITH_AES_128_CBC_SHA",
    "TLS_SRP_SHA_WITH_AES_256_CBC_SHA",
    "TLS_SRP_SHA_DSS_WITH_AES_128_CBC_SHA",
    "TLS_SRP_SHA_DSS_WITH_AES_256_CBC_SHA",
    "TLS_SRP_SHA_RSA_WITH_AES_128_CBC_SHA",
    "TLS_SRP_SHA_RSA_WITH_AES_256_CBC_SHA",
    "TLS_AES_128_GCM_SHA256",
```

```
    "TLS_AES_256_GCM_SHA384",
    "TLS_CHACHA20_POLY1305_SHA256"
  ],
  "protocol_versions": [
    "TLSv1.3",
    "TLSv1.2"
  ]
},
"management_protocols": {
  "rsh_enabled": false,
  "telnet_enabled": false
 }
}
```

PATCH Examples

Enabling software encryption conversion in the cluster

The following example shows how to enable software encryption conversion in the cluster.

```
# The API:
PATCH /api/security

# The call
curl -X PATCH "https://<mgmt_ip>/api/security" -d '{
"software_data_encryption.conversion_enabled" : true }'

# The response:
{
 "job": {
     "uuid": "ebcbd82d-1cd4-11ea-8f75-005056ac4adc",
     "_links": {
         "self": {
             "href": "/api/cluster/jobs/ebcbd82d-1cd4-11ea-8f75-
005056ac4adc"
         }
     }
 }
}
```

This returns a job UUID. A subsequent GET for this job UUID returns details of the job.

```
# The API:
/api/cluster/jobs/{uuid}

# The call
curl -X GET "https://<mgmt_ip>/api/cluster/jobs/ebcbd82d-1cd4-11ea-8f75-
005056ac4adc"

# The response:
{
"uuid": "ebcbd82d-1cd4-11ea-8f75-005056ac4adc",
"description": "PATCH /api/security",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2019-12-12T06:45:40-05:00",
"end_time": "2019-12-12T06:45:40-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/ebcbd82d-1cd4-11ea-8f75-005056ac4adc"
  }
}
}
```

Enabling FIPS mode in the cluster

The following example shows how to enable FIPS mode in the cluster.

```
# The API:
PATCH /api/security

# The call
curl -X PATCH "https://<mgmt_ip>/api/security" -d '{ "fips.enabled" : true
}'

# The response:
{
 "job": {
     "uuid": "8e7f59ee-a9c4-4faa-9513-bef689bbf2c2",
     "_links": {
         "self": {
             "href": "/api/cluster/jobs/8e7f59ee-a9c4-4faa-9513-
bef689bbf2c2"
         }
     }
 }
}
```

This returns a job UUID. A subsequent GET for this job UUID returns details of the job.

```
# The API:
/api/cluster/jobs/{uuid}

# The call
curl -X GET "https://<mgmt_ip>/api/cluster/jobs/8e7f59ee-a9c4-4faa-9513-
bef689bbf2c2"

# The response:
{
"uuid": "8e7f59ee-a9c4-4faa-9513-bef689bbf2c2",
"description": "PATCH /api/security",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2020-04-28T06:55:40-05:00",
"end_time": "2020-04-28T06:55:41-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/8e7f59ee-a9c4-4faa-9513-bef689bbf2c2"
  }
}
}
```

Configuring permissible TLS protocols and cipher suites in the cluster

The following example shows how to configure the cluster to only allow TLSv1.3 & TLSv1.2 with selected cipher suites.

```
# The API:
PATCH /api/security

# The call
curl -X PATCH "https://<mgmt_ip>/api/security" -d '{ "tls" : {
"protocol_versions" : ["TLSv1.3", "TLSv1.2"], "cipher_suites" :
["TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384", "TLS_AES_256_GCM_SHA384"] } }'

# The response:
{
 "job": {
     "uuid": "b45b6290-f4f2-442a-aa0e-4d3ffefe5e0d",
     "_links": {
         "self": {
             "href": "/api/cluster/jobs/b45b6290-f4f2-442a-aa0e-
4d3ffefe5e0d"
         }
     }
 }
}
```

This returns a job UUID. A subsequent GET for this job UUID returns details of the job.

```
# The API:
/api/cluster/jobs/{uuid}

# The call
curl -X GET "https://<mgmt_ip>/api/cluster/jobs/b45b6290-f4f2-442a-aa0e-
4d3ffefe5e0d"

# The response:
{
"uuid": "b45b6290-f4f2-442a-aa0e-4d3ffefe5e0d",
"description": "PATCH /api/security",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2021-03-22T08:52:50-05:00",
"end_time": "2021-03-22T08:52:51-05:00",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/b45b6290-f4f2-442a-aa0e-4d3ffefe5e0d"
  }
}
}
```

Enabling security protocols in the cluster

The following example shows how to enable the security protocol rsh in the cluster.

```
# The API:
PATCH /api/security

# The call
curl -X PATCH "https://<mgmt_ip>/api/security" -d '{
"management_protocols" : { "rsh_enabled" : true } }'

# The response
{
"job": {
"uuid": "2980ba28-adab-11eb-8fa3-005056bbfa84",
"_links": {
  "self": {
    "href": "/api/cluster/jobs/2980ba28-adab-11eb-8fa3-005056bbfa84"
  }
 }
 }
}

# The call:
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/security/?fields=management_protocols"

# The response:
{
"management_protocols": {
  "rsh_enabled": false,
  "telnet_enabled": false
},
"_links": {
  "self": {
    "href": "/api/security"
  }
}
}
```

Retrieve information about security configured on the cluster

GET `/security`

Introduced In: 9.7

Retrieves information about the security configured on the cluster.

Related ONTAP commands

- `security config show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
fips	fips	Cluster-wide Federal Information Processing Standards (FIPS) mode information.
management_protocols	management_protocols	Cluster-wide security protocols related information.
onboard_key_manager_configurable_status	onboard_key_manager_configurable_status	Indicates whether the Onboard Key Manager can be configured in the cluster.
software_data_encryption	software_data_encryption	Cluster-wide software data encryption related information.
tls	tls	Cluster-wide Transport Layer Security (TLS) configuration information

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "onboard_key_manager_configurable_status": {
    "code": 65537300,
    "message": "No platform support for volume encryption in following
nodes - node1, node2."
  },
  "software_data_encryption": {
    "encryption_state": "string"
  },
  "tls": {
    "cipher_suites": [
      "TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384"
    ],
    "protocol_versions": [
      "string"
    ]
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

fips

Cluster-wide Federal Information Processing Standards (FIPS) mode information.

Name	Type	Description
enabled	boolean	Indicates whether or not the software FIPS mode is enabled on the cluster. Our FIPS compliance involves configuring the use of only approved algorithms in applicable contexts (for example TLS), as well as the use of formally validated cryptographic module software implementations, where applicable. The US government documents concerning FIPS 140-2 outline the relevant security policies in detail.

management_protocols

Cluster-wide security protocols related information.

Name	Type	Description
rsh_enabled	boolean	Indicates whether or not security protocol rsh is enabled on the cluster.
telnet_enabled	boolean	Indicates whether or not security protocol telnet is enabled on the cluster.

onboard_key_manager_configurable_status

Indicates whether the Onboard Key Manager can be configured in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if the Onboard Key Manager can be configured in the cluster.
message	string	Reason that Onboard Key Manager cannot be configured in the cluster.
supported	boolean	Set to true if the Onboard Key Manager can be configured in the cluster.

software_data_encryption

Cluster-wide software data encryption related information.

Name	Type	Description
conversion_enabled	boolean	Indicates whether or not software encryption conversion is enabled on the cluster. A PATCH request initiates the conversion of all non-encrypted metadata volumes in the cluster to encrypted metadata volumes and all non-NAE aggregates to NAE aggregates. For the PATCH request to start, the cluster must have either an Onboard or an external key manager set up and the aggregates should either be empty or have only metadata volumes. No data volumes should be present in any of the aggregates in the cluster. For MetroCluster configurations, a PATCH request enables conversion on all the aggregates and metadata volumes of both local and remote clusters and is not allowed when the MetroCluster is in switchover state.
disabled_by_default	boolean	Indicates whether or not default software data at rest encryption is disabled on the cluster.

Name	Type	Description
encryption_state	string	Software data encryption state. encrypted ‐ All the volumes are encrypted. encrypting ‐ Encryption conversion operation is in progress. partial ‐ Some volumes are encrypted, and others remains in plain text. rekeying ‐ All volumes are currently being encrypted with a new key. unencrypted ‐ None of the volumes are encrypted. conversion_paused ‐ Encryption conversion operation is paused on one or more volumes. rekey_paused ‐ Encryption rekey operation is paused on one or more volumes.
rekey	boolean	

tls

Cluster-wide Transport Layer Security (TLS) configuration information

Name	Type	Description
cipher_suites	array[string]	Names a cipher suite that the system can select during TLS handshakes. A list of available options can be found on the Internet Assigned Number Authority (IANA) website.
protocol_versions	array[string]	Names a TLS protocol version that the system can select during TLS handshakes. The use of SSLv3 or TLSv1 is discouraged.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the software FIPS mode or enable conversion of non-encrypted metadata volumes non-NAE aggregates

PATCH `/security`

Introduced In: 9.8

Updates the software FIPS mode or modifies software data encryption.
The PATCH request can be used to enable conversion of non-encrypted metadata volumes to encrypted metadata volumes and non-NAE aggregates to NAE aggregates.

Related ONTAP commands

- `security config modify`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
fips	fips	Cluster-wide Federal Information Processing Standards (FIPS) mode information.
management_protocols	management_protocols	Cluster-wide security protocols related information.
software_data_encryption	software_data_encryption	Cluster-wide software data encryption related information.

Name	Type	Description
tls	tls	Cluster-wide Transport Layer Security (TLS) configuration information

Example request

```
{
  "software_data_encryption": {
    "encryption_state": "string"
  },
  "tls": {
    "cipher_suites": [
      "TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384"
    ],
    "protocol_versions": [
      "string"
    ]
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636142	This operation is not supported in a mixed-release cluster.
5636145	This operation is not supported when cluster security is configured with FIPS mode.
52428817	SSLv3 is not supported when FIPS is enabled.
52428824	TLSv1 is not supported when FIPS is enabled.
52428830	Cannot enable FIPS-compliant mode because the configured minimum security strength for certificates is not compatible.
52428832	TLSv1.1 is not supported when FIPS is enabled.
52559974	Cannot enable FIPS-compliant mode because a certificate that is not FIPS-compliant is in use.
65536987	One or more key servers are unavailable.
196608047	Operation is not allowed when volume move is in progress.
196608070	Key manager is not configured on the cluster. Configure either an external Key Management Server or an onboard key manager.
196608081	Cannot start software encryption conversion while there are data volumes in the cluster.
196608082	The operation is not valid when the MetroCluster is in switchover mode.
196608368	Failed to perform the requested operation. One or more data volume in offline state.
196608369	Conversion cannot be enabled because the cluster contains read-only or primordial logical data-protection volumes. Retry the patch operation after deleting those volumes.
196608370	The conversion of non-encrypted volumes to NVE (NetApp Volume Encryption) volumes is already running. Monitor the NVE conversion status by querying the "software_data_encryption.encryption_state" field on the "/api/security" endpoint.

Error Code	Description
196608371	NVE (NetApp Volume Encryption) volumes are already being rekeyed. Monitor the NVE rekey status by querying the "software_data_encryption.encryption_state" field on the "/api/security" endpoint.
196608372	An automated ONTAP update is in progress, retry the PATCH request after it is completed.
196608373	Unable to perform the encryption operation because of a mixed-release cluster. Complete the upgrade or revert operation, then try the PATCH request again.
196608374	Failed to perform the requested operation. One or more SVMs not in admin running state.
196608375	Failed to perform the requested operation. One or more volume is of temporary type.
196608376	Internal error. Could not get volume encryption information.
196608377	Internal error. The Volume Location Database (VLDB) is inconsistent. Contact support personnel to resolve this issue.
196608378	Failed to perform the requested operation. Data SVM Key manager configuration is in mixed state.
196608379	Internal error. The encryption metadata for the volume is inconsistent. Contact technical support for assistance.
196608380	Failed to perform the requested operation. Wafliron is currently active.
196608381	Failed to perform the requested operation. A clone split operation is in progress.
196608382	Failed to perform the requested operation. A volume rehost operation is in progress.
196608383	Failed to perform the requested operation. The cluster contains one or more SnapLock volume.
196608384	The PATCH request to start rekey failed because the cluster contains one or more plain text volumes. Retry the PATCH request after converting the existing plain text volumes to encrypted volumes.
196608385	Failed to perform the requested operation. Keystore configuration is being switched. Wait until the keystore is in the active state and then try the PATCH request again.

Error Code	Description
196608386	Failed to perform the requested operation. Rekey operation for one or more SVMs is in progress. Wait until the keystore is in the active state and then try the PATCH request again.
196608387	"software_data_encryption.conversion_enabled" cannot be set to "false" in a PATCH request.
196608388	Both "software_data_encryption.conversion_enabled" and "software_data_encryption.disabled_by_default" cannot be set to "true" in a single PATCH request.
196608389	Both "software_data_encryption.conversion_enabled" and "software_data_encryption.rekey" cannot be set to "true" in a single PATCH request.
196608390	"software_data_encryption.rekey" cannot be set to "false" in a PATCH request.
196608391	Both "software_data_encryption.rekey" and "software_data_encryption.disabled_by_default" cannot be set to "true" in a single PATCH request.
196608392	The PATCH request for cluster level rekey requires an effective cluster version of 9.16.1 or later.
196608393	The PATCH request for cluster level rekey is not supported on this platform.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

fips

Cluster-wide Federal Information Processing Standards (FIPS) mode information.

Name	Type	Description
enabled	boolean	Indicates whether or not the software FIPS mode is enabled on the cluster. Our FIPS compliance involves configuring the use of only approved algorithms in applicable contexts (for example TLS), as well as the use of formally validated cryptographic module software implementations, where applicable. The US government documents concerning FIPS 140-2 outline the relevant security policies in detail.

management_protocols

Cluster-wide security protocols related information.

Name	Type	Description
rsh_enabled	boolean	Indicates whether or not security protocol rsh is enabled on the cluster.
telnet_enabled	boolean	Indicates whether or not security protocol telnet is enabled on the cluster.

onboard_key_manager_configurable_status

Indicates whether the Onboard Key Manager can be configured in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if the Onboard Key Manager can be configured in the cluster.
message	string	Reason that Onboard Key Manager cannot be configured in the cluster.
supported	boolean	Set to true if the Onboard Key Manager can be configured in the cluster.

software_data_encryption

Cluster-wide software data encryption related information.

Name	Type	Description
conversion_enabled	boolean	Indicates whether or not software encryption conversion is enabled on the cluster. A PATCH request initiates the conversion of all non-encrypted metadata volumes in the cluster to encrypted metadata volumes and all non-NAE aggregates to NAE aggregates. For the PATCH request to start, the cluster must have either an Onboard or an external key manager set up and the aggregates should either be empty or have only metadata volumes. No data volumes should be present in any of the aggregates in the cluster. For MetroCluster configurations, a PATCH request enables conversion on all the aggregates and metadata volumes of both local and remote clusters and is not allowed when the MetroCluster is in switchover state.
disabled_by_default	boolean	Indicates whether or not default software data at rest encryption is disabled on the cluster.

Name	Type	Description
encryption_state	string	Software data encryption state. encrypted ‐ All the volumes are encrypted. encrypting ‐ Encryption conversion operation is in progress. partial ‐ Some volumes are encrypted, and others remains in plain text. rekeying ‐ All volumes are currently being encrypted with a new key. unencrypted ‐ None of the volumes are encrypted. conversion_paused ‐ Encryption conversion operation is paused on one or more volumes. rekey_paused ‐ Encryption rekey operation is paused on one or more volumes.
rekey	boolean	

tls

Cluster-wide Transport Layer Security (TLS) configuration information

Name	Type	Description
cipher_suites	array[string]	Names a cipher suite that the system can select during TLS handshakes. A list of available options can be found on the Internet Assigned Number Authority (IANA) website.
protocol_versions	array[string]	Names a TLS protocol version that the system can select during TLS handshakes. The use of SSLv3 or TLSv1 is discouraged.

security_config

Name	Type	Description
fips	fips	Cluster-wide Federal Information Processing Standards (FIPS) mode information.

Name	Type	Description
management_protocols	management_protocols	Cluster-wide security protocols related information.
software_data_encryption	software_data_encryption	Cluster-wide software data encryption related information.
tls	tls	Cluster-wide Transport Layer Security (TLS) configuration information

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage security-related accounts

Security accounts endpoint overview

Overview

A valid user account is required to login to and provision, monitor, and manage the cluster. The scope of the management operation can be at the cluster level or at an individual SVM level. There is a need to create user accounts with specific privileges apart from the default user accounts, "admin", for cluster and "vsadmin" for SVM. Custom user accounts can be configured to perform specific (scoped) operations. User accounts can either be created locally (on the Netapp system) or referenced from an external directory server (NIS, LDAP, or Active Directory).
Apart from creation, modification, and deletion of a user account, locking and unlocking of a user account or resetting the password (for local accounts only) is possible.

A user account must be associated with the following before it can become operational:

1. A management application (SSH, HTTP, console, service_processor, and such like) for user login. HTTP enables REST API access.
2. Scope - either cluster or SVM.
3. Authentication source - password (local, NIS/LDAP, Active Directory), public/private key pair-based, certificate based.
4. RBAC role - determines what operations are permitted for the user account.

Restrictions

A number of internal/restricted account names, such as admin, diag, autosupport, and root cannot be used.

There must be at least one console cluster administrator account. Any attempt to delete the last remaining administrator account fails.

Multi-factor authentication is only possible for SSH and Service Processor (SP) applications. For the SSH application, the only possible combinations are password (local or NIS/LDAP/Active Directory) and public key and password or public key (local) and TOTP. For the SP application, the only valid combination is password and public key.

If an account is created using the HTTP application type, the password authentication method, and its username contains one of the following special characters: @ or \|, then you cannot use this account for basic authorization and its only purpose is for OAuth 2.0 validation.

All authentication sources are not supported by all applications. You must select a compatible authentication method based on the application. The following types of authentications methods are supported:

Application	Supported Authentication Methods
amqp	password
console	password
service_processor	password, publickey
HTTP	password, domain, nsswitch, certificate
ONTAPI	password, domain, nsswitch, certificate
SSH	password, publickey (key pair), domain, nsswitch, totp

In this table, "totp" means time-based one-time password and is only allowed to be configured as second authentication, "certificate" means security certificate, "domain" means that the user directory server is an external Active Directory, "nsswitch" means the directory server is an external NIS or LDAP server. At login time, the user is authenticated with these external directory servers which must be provisioned separately. For the SP (*service_processor* in above table) application, *publickey* can only be configured as the second factor of authentication.

Support for publickey authentication and MFA for Domain users has been added.

Support for TOTP as a secondary authentication method with password or public key as the primary authentication method has been added.

For SP (*service_processor* in above table) application, support for *publickey* as a secondary authentication method with password as the primary authentication method has been added.

Examples

Creating a cluster-scoped user account

Specify the user account name, role name, and the tuples (of application and authentication methods) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped user account.

Each entry in the applications array must be for a different application.

```
# The API:
POST "/api/security/accounts"

# The call to create a cluster user account with applications ssh, http
and password authentication scheme:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"name":"cluster_user1","applications":[{"application":"ssh","authenticat
ion_methods":["password"],"second_authentication_method":"none"},{"applica
tion":"http","authentication_methods":["password"]}],"role":"admin","passw
ord":"p@ssw@rd123"}'
Note: The password is an optional parameter for creation and can be set
later using a PATCH request. See the examples for modification of user
account or password.
```

Creating an SVM-scoped user account

For an SVM-scoped account, specify either the SVM name as the owner.name or SVM uuid as the owner.uuid along with other parameters for the user account. These indicate the SVM for which the user account is being created and can be obtained from the response body of GET performed on the */api/svm/svms* API.

```
# The API:
POST "/api/security/accounts"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"owner":{"uuid":"aaef7c38-4bd3-11e9-b238-
0050568e2e25"},"name":"svm_user1","applications":[{"application":"ssh","au
thentication_methods":["password"],"second_authentication_method":"none"}]
,"role":"vsadmin","password":"p@ssw@rd123"}'
```

Retrieving the configured user accounts

Use the following API to retrieve all of the user accounts or a filtered list of user accounts (by name, for a specific SVM, and so on).

```
# The API:
GET "/api/security/accounts"

# The call to retrieve all the user accounts configured in the cluster:
curl -X GET "https://<mgmt-ip>/api/security/accounts"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "admin",
    "_links": {
      "self": {
        "href": "/api/security/accounts/2903de6f-4bd2-11e9-b238-
0050568e2e25/admin"
      }
    }
  },
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
```

```
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "autosupport",
    "_links": {
      "self": {
        "href": "/api/security/accounts/2903de6f-4bd2-11e9-b238-
0050568e2e25/autosupport"
            }
    }
  },
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "cluster_user1",
    "_links": {
      "self": {
        "href": "/api/security/accounts/2903de6f-4bd2-11e9-b238-
0050568e2e25/cluster_user1"
      }
    }
  },
  {
    "owner": {
      "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "svm_user1",
    "_links": {
      "self": {
```

```
        "href": "/api/security/accounts/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_user1"
      }
    }
  },
  {
    "owner": {
      "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "vsadmin",
    "_links": {
      "self": {
        "href": "/api/security/accounts/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin"
      }
    }
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/security/accounts"
  }
}
}

# The scoped call to retrieve the configured cluster-scoped user accounts:
curl -X GET "https://<mgmt-ip>/api/security/accounts/?scope=cluster"

# The scoped call to retrieve the configured SVM-scoped user accounts:
curl -X GET "https://<mgmt-ip>/api/security/accounts/?scope=svm"

# The scoped call to retrieve the user accounts configured for the SVM
"svm1":
curl -X GET "https://<mgmt-ip>/api/security/accounts/?owner.name=svm1"

# The scoped call to retrieve the user accounts configured with the
"admin" role:
curl -X GET "https://<mgmt-ip>/api/security/accounts/?role=admin"
```

Creating an Active Directory users with publickey authentication

Specify the Active Directory user account name, role name, and the tuples (application and authentication methods) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped user account.

```
# The API:
POST "/api/security/accounts"

# The call to create a cluster user account with application ssh and
publickey authentication scheme for domain users:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"name":"domain_name\\cluster_user__u1","applications":[{"application":"s
sh","authentication_methods":["publickey"]}]}'
```

Creating an Active Directory user with MFA(domain+publickey)

Specify the Active Directory user account name, role name, and the tuples (application and authentication methods) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped user account.

```
# The API:
POST "/api/security/accounts"

# The call to create a cluster user account with application ssh and and
MFA for domain users:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"name":"domain_name\\cluster_user_u1","applications":[{"application":"ss
h","authentication_methods":["domain"],"second_authentication_method":"pub
lickey"}]}'
```

Retrieving the configured Active directory user accounts

Use the following API to retrieve all of the Active directory user accounts.

```
# The API:
curl -X GET "https://<mgmt-ip>/api/security/accounts/?name=*\*"

# The response:
{
"records": [
{
  "owner": {
    "uuid": "d6a740a0-4086-11ed-9f68-0050568edfd7",
    "name": "cluster-1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/d6a740a0-4086-11ed-9f68-0050568edfd7"
      }
    }
  },
  "name": "domain\\ad_user_u1",
  "_links": {
    "self": {
      "href": "/api/security/accounts/d6a740a0-4086-11ed-9f68-
0050568edfd7/domain%5Cad_user_u1"
    }
  }
}
 ],
 "num_records": 1,
 "_links": {
"self": {
  "href": "/api/security/accounts/?name=*\\*"
}
 }
}
```

Creating a user with MFA (password+TOTP)

Cluster-scoped user account:
Follow the cluster-scoped user creation example and additionally specify the 'totp' as the second_authentication_method.

```
# The API:
POST "/api/security/accounts"

# The call to create a cluster user account with application ssh,
authentication password and totp:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"name":"cluster_user_1","applications":[{"application":"ssh","authentica
tion_methods":["password"],"second_authentication_method":"totp"}]}'
```

SVM-scoped user account:
Follow the SVM-scoped user creation example and additionally specify the 'totp' as the second_authentication_method.

```
#The API

# The call to create a SVM-scoped user account with application ssh,
authentication password and totp:
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"owner":{"uuid":"aaef7c38-4bd3-11e9-b238-
0050568e2e25"},"name":"svm_user1","applications":[{"application":"ssh","au
thentication_methods":["password"],"second_authentication_method":"totp"}]
,"role":"vsadmin","password":"p@ssw@rd123"}'
```

Creating an SP user with MFA (password + publickey)

Specify the SP user account name, role name, and the tuples (application and authentication methods) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped user account.

```
# The API:
POST "/api/security/accounts"

# The call to create a cluster user account with application
service_processor, authentication method password and second
authentication publickey
curl -X POST "https://<mgmt-ip>/api/security/accounts" -d
'{"name":"cluster_sp_user1","applications":[{"application":"service_proces
sor","authentication_methods":["password"],"second_authentication_method":
"publickey"}]}'
```

Retrieving the configured SP user accounts

Use the following API to retrieve all of the configured SP user accounts.

```
# The API:
curl -X GET "https://<mgmt-
ip>/api/security/accounts/?applications.application=service_processor"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "cluster_sp_user1",
    "applications": [
      {
        "application": "service_processor"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/security/accounts/2903de6f-4bd2-11e9-b238-
0050568e2e25/"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/security/accounts/?applications.application=service_processor"
  }
}
}
```

Retrieve user accounts in the cluster

GET `/security/accounts`

Introduced In: 9.6

Retrieves a list of user accounts in the cluster.

Related ONTAP commands

- `security login show`

Learn more

- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.name	string	query	False	Filter by owner.name • Introduced in: 9.7
owner.uuid	string	query	False	Filter by owner.uuid • Introduced in: 9.7
role.name	string	query	False	Filter by role.name • Introduced in: 9.7
comment	string	query	False	Filter by comment • Introduced in: 9.7
scope	string	query	False	Filter by scope • Introduced in: 9.7
password_hash_algorithm	string	query	False	Filter by password_hash_algorithm • Introduced in: 9.11

Name	Type	In	Required	Description
applications.application	string	query	False	Filter by applications.application • Introduced in: 9.7
applications.authentication_methods	string	query	False	Filter by applications.authentication_methods • Introduced in: 9.7
applications.is_ns_switch_group	boolean	query	False	Filter by applications.is_ns_switch_group • Introduced in: 9.15
applications.second_authentication_method	string	query	False	Filter by applications.second_authentication_method • Introduced in: 9.7
applications.is_ldap_fastbind	boolean	query	False	Filter by applications.is_ldap_fastbind • Introduced in: 9.14
locked	boolean	query	False	Filter by locked • Introduced in: 9.7
name	string	query	False	Filter by name • Introduced in: 9.7 • maxLength: 64 • minLength: 3

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[account]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "applications": [
        {
          "application": "string",
          "authentication_methods": [
            "string"
          ],
          "second_authentication_method": "string"
        }
      ],
      "comment": "string",
      "name": "joe.smith",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "password_hash_algorithm": "sha512",
      "role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
          "name": "admin"
        },
        "scope": "string"
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

account_application

Name	Type	Description
application	string	Applications
authentication_methods	array[string]	
is_ldap_fastbind	boolean	Optional property that specifies the mode of authentication as LDAP Fastbind.
is_ns_switch_group	boolean	Optional property that specifies whether the user is an LDAP or NIS group.

Name	Type	Description
second_authentication_method	string	An optional additional authentication method for multi-factor authentication (MFA). This property is only supported for SSH (*ssh*) and Service Processor (*service_processor*) applications. It is ignored for all other applications. Time-based One-Time Passwords (TOTPs) are only supported with the authentication method password or public key. For the Service Processor (*service_processor*) application, *none* and *publickey* are the only supported enum values.

owner

Owner name and UUID that uniquely identifies the user account.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

Name	Type	Description
_links	_links	
name	string	Role name

account

Name	Type	Description
_links	_links	
applications	array[account_application]	

Name	Type	Description
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
name	string	User or group account name
owner	owner	Owner name and UUID that uniquely identifies the user account.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new user account

POST `/security/accounts`

Introduced In: 9.6

Creates a new user account.

Required parameters

- `name` - Account name to be created.
- `applications` - Array of one or more application tuples (of application and authentication methods).

Optional parameters

- `owner.name` or `owner.uuid` - Name or UUID of the SVM for an SVM-scoped user account. If not supplied, a cluster-scoped user account is created.
- `role` - RBAC role for the user account. Defaulted to `admin` for cluster user account and to `vsadmin` for SVM-scoped account.
- `password` - Password for the user account (if the authentication method is opted as password for one or more of applications).
- `second_authentication_method` - Needed for MFA and only supported for *ssh* and *service_processor* applications. Defaults to *none* if not supplied.
- `comment` - Comment for the user account (e.g purpose of this account).
- `locked` - Locks the account after creation. Defaults to `false` if not supplied.
- `is_ldap_fastbind` - Needed for LDAP Fastbind Authentication and only supported for applications SSH, ONTAPI, and HTTP with authentication method "nsswitch" only. Defaults to false if not supplied.
- `is_ns_switch_group` - Specifies whether the user is an LDAP or NIS group and is only supported for SSH, ONTAPI, and HTTP applications with the authentication method "nsswitch". Defaults to false if not supplied.

Related ONTAP commands

- `security login create`

Learn more

- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
applications	array[account_application]	
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
name	string	User or group account name
owner	owner	Owner name and UUID that uniquely identifies the user account.
password	string	Password for the account. The password can contain a mix of lower and upper case alphabetic characters, digits, and special characters.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "applications": [
    {
      "application": "string",
      "authentication_methods": [
        "string"
      ],
      "second_authentication_method": "string"
    }
  ],
  "comment": "string",
  "name": "joe.smith",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "password": "string",
  "password_hash_algorithm": "sha512",
  "role": {
    "name": "admin"
  },
  "scope": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1261215	The role was not found.
1261225	Invalid command directory name.
1263343	Cannot lock user with password not set or non-password authentication method.
2621475	This operation is not supported on a node SVM.
2621601	This operation is not supported on a system SVM.
2621706	The specified owner.uuid and owner.name refer to different SVMs.
5636099	User creation with a non-admin role is not supported for service-processor application.
5636121	The user account name is reserved for use by the system.
5636126	Cannot create a user with the username or role as autosupport because it is reserved by the system.
5636136	Specifying "is_ns_switch_group" as "true" is supported only for authentication method "nsswitch".
5636140	Creating a login with application console for a data SVM is not supported.
5636141	Creating a login with application service-processor for a data SVM is not supported.
5636164	The authentication method and the second authentication method cannot be any combination of 'nsswitch' and 'password'.
5636165	Second authentication method is not supported for NIS or LDAP group based accounts.
5636176	The application and authentication-method combination is invalid.
5636178	An invalid value is specified for field "application".
5636179	Creating an AMQP application login for a data SVM is not supported.
5636197	LDAP fastbind combination for application and authentication method is not supported.
5636198	LDAP fastbind authentication is supported only for nsswitch.
5636206	Non-domain user cannot have a backslash in the username.
5636207	If the value for either the authentication-method or second-authentication-method parameters is domain, the other parameter must be publickey or none.

Error Code	Description
5636212	TOTP is supported only when the primary authentication method is password or public key.
5636214	Configuring the user with TOTP as a secondary authentication method requires an effective cluster version of 9.13.1 or later.
5636223	Specifying "is_ns_switch_group" as "true" is supported only for SSH, ONTAPI, and HTTP applications.
5636224	Configuring a Service Processor (SP) user with two-factor authentication requires an effective cluster version of 9.15.1 or later.
5636225	For a Service Processor (SP) user, the second factor of authentication must be one of publickey or none.
5636226	Internal error. Failed to check for ONTAP capability.
5636250	The "second_authentication_method" parameter is supported for HTTP, SSH, and Service Processor (SP) applications only.
5636251	For HTTP application, "publickey" is the only supported value for the "second_authentication_method" parameter; and can be specified only if the "authentication_methods" parameter has value "password" or "domain" or "nsswitch".
7077897	Invalid character in username.
7077898	The username must contain both letters and numbers.
7077899	The username does not meet length requirements.
7077906	A role with that name has not been defined for the Vserver.
7077918	The password cannot contain the username.
7077919	The minimum length for new password does not meet the policy.
7077920	A new password must have both letters and numbers.
7077921	The minimum number of special characters required do not meet the policy.
7077929	Cannot lock user with password not set or non-password authentication method.
7077940	The password exceeds the maximum supported length.
7077941	The defined password composition exceeds the maximum password length of 128 characters.

Error Code	Description
7078900	An admin password is not set. Set the password by including it in the request.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

account_application

Name	Type	Description
application	string	Applications
authentication_methods	array[string]	
is_ldap_fastbind	boolean	Optional property that specifies the mode of authentication as LDAP Fastbind.
is_ns_switch_group	boolean	Optional property that specifies whether the user is an LDAP or NIS group.
second_authentication_method	string	An optional additional authentication method for multi-factor authentication (MFA). This property is only supported for SSH (*ssh*) and Service Processor (*service_processor*) applications. It is ignored for all other applications. Time-based One-Time Passwords (TOTPs) are only supported with the authentication method password or public key. For the Service Processor (*service_processor*) application, *none* and *publickey* are the only supported enum values.

owner

Owner name and UUID that uniquely identifies the user account.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

Name	Type	Description
name	string	Role name

account

Name	Type	Description
applications	array[account_application]	
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
name	string	User or group account name
owner	owner	Owner name and UUID that uniquely identifies the user account.
password	string	Password for the account. The password can contain a mix of lower and upper case alphabetic characters, digits, and special characters.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage scoped user accounts

Security accounts owner.uuid name endpoint overview

Overview

This API displays and manages the configuration of scoped user accounts.

Newly created user accounts might need to be updated for many reasons. For example, a user account might need to use a different application or its role might need to be modified. According to a policy, the password or authentication source of a user account might need to be changed, or a user account might need to be locked or deleted from the system. This API allows you to make these changes to user accounts.

Specify the owner UUID and the user account name in the URI path. The owner UUID corresponds to the UUID of the SVM for which the user account has been created and can be obtained from the response body of the GET request performed on one of the following APIs:
 /api/security/accounts for all user accounts
 /api/security/accounts/?scope=cluster for cluster-scoped user accounts
 /api/security/accounts/?scope=svm for SVM-scoped accounts
 /api/security/accounts/?owner.name=<svm-name></i> for a specific SVM This API response contains the complete URI for each user account that can be used.</svm-name>

Examples

Retrieving the user account details

```
# The API:
GET "/api/security/accounts/{owner.uuid}/{name}"
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/security/accounts/aef7c38-4bd3-11e9-
b238-0050568e2e25/svm_user1"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
    }
        }
},
"name": "svm_user1",
"applications": [
  {
    "application": "ssh",
    "authentication_methods": [
      "password"
    ],
    "second_authentication_method": "none"
  }
],
"role": {
  "name": "vsadmin",
  "_links": {
    "self": {
      "href": "/api/svms/aaef7c38-4bd3-11e9-b238-
0050568e2e25/admin/roles/vsadmin"
    }
  }
},
"locked": false,
"password_hash_algorithm": "sha512",
"scope": "svm",
"_links": {
  "self": {
    "href": "/api/security/accounts/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_user1"
  }
}
}
```

Updating the applications and role in a user account

Specify the desired configuration in the form of tuples (of applications and authentication methods) and the role. All other previously configured applications that are not specified in the "applications" parameter of the PATCH request will be de-provisioned for the user account.

```
# The API:
PATCH "/api/security/accounts/{owner.uuid}/{name}"

# The call to update the applications and role:
curl -X PATCH "https://<mgmt-ip>/api/security/accounts/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_user1" -d
'{"applications":[{"application":"http","authentication_methods":["domain"
]},{"application":"ontapi","authentication_methods":["password"]}],"role":
{"name": "vsadmin-backup"}}'

# The call to update only the role:
curl -X PATCH "https://<mgmt-ip>/api/security/accounts/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_user1" -d '{"role":"vsadmin-protocol"}'
```

Updating the password for a user account

```
# The API:
PATCH "/api/security/accounts/{owner.uuid}/{name}"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/accounts/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_user1" -d '{"password":"newp@ssw@rd2"}'
```

Locking a user account

```
The API:
PATCH "/api/security/accounts/{owner.uuid}/{name}"
The call:
curl -X PATCH "https://<mgmt-ip>/api/security/accounts/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_user1" -d '{"locked":"true"}'
```

Deleting a user account

```
# The API:
DELETE "/api/security/accounts/{owner.uuid}/{name}"

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/accounts/aaef7c38-4bd3-
11e9-b238-0050568e2e25/svm_user1"
```

Delete a user account

DELETE `/security/accounts/{owner.uuid}/{name}`

Introduced In: 9.6

Deletes a user account.

Required parameters

- `name` - Account name to be deleted.
- `owner.uuid` - UUID of the SVM housing the user account to be deleted.

Related ONTAP commands

- `security login delete`

Learn more

- DOC /security/accounts/{owner.uuid}/{name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID
name	string	path	True	User account name

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636098	Last unlocked account that has an admin role cannot be deleted.
5636125	The operation is not supported on system accounts.
5636146	Cannot delete the last console account with admin role.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific user account

GET `/security/accounts/{owner.uuid}/{name}`

Introduced In: 9.6

Retrieves a specific user account.

Related ONTAP commands

- `security login show`

Learn more

- DOC /security/accounts/{owner.uuid}/{name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID
name	string	path	True	User account name

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
applications	array[account_application]	
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
name	string	User or group account name
owner	owner	Owner name and UUID that uniquely identifies the user account.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "applications": [
    {
      "application": "string",
      "authentication_methods": [
        "string"
      ],
      "second_authentication_method": "string"
    }
  ],
  "comment": "string",
  "name": "joe.smith",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "password_hash_algorithm": "sha512",
  "role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "scope": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

account_application

Name	Type	Description
application	string	Applications
authentication_methods	array[string]	
is_ldap_fastbind	boolean	Optional property that specifies the mode of authentication as LDAP Fastbind.
is_ns_switch_group	boolean	Optional property that specifies whether the user is an LDAP or NIS group.
second_authentication_method	string	An optional additional authentication method for multi-factor authentication (MFA). This property is only supported for SSH (*ssh*) and Service Processor (*service_processor*) applications. It is ignored for all other applications. Time-based One-Time Passwords (TOTPs) are only supported with the authentication method password or public key. For the Service Processor (*service_processor*) application, *none* and *publickey* are the only supported enum values.

owner

Owner name and UUID that uniquely identifies the user account.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

Name	Type	Description
_links	_links	
name	string	Role name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a user account

PATCH `/security/accounts/{owner.uuid}/{name}`

Introduced In: 9.6

Updates a user account. Locks or unlocks a user account and/or updates the role, applications, and/or password for the user account.

Required parameters

- `name` - Account name to be updated.
- `owner.uuid` - UUID of the SVM housing the user account to be updated.

Optional parameters

- `applications` - Array of one or more tuples (of application and authentication methods).
- `role` - RBAC role for the user account.
- `password` - Password for the user account (if the authentication method is opted as password for one or more of applications).
- `second_authentication_method` - Needed for MFA and only supported for *ssh* and *service_processor* applications. Defaults to *none* if not supplied.
- `comment` - Comment for the user account (e.g purpose of this account).
- `locked` - Set to true/false to lock/unlock the account.
- `is_ldap_fastbind` - Set to true/false to enable LDAP Fastbind Authentication.
- `is_ns_switch_group` - Set to true/false to specify whether the user is an LDAP or NIS group.

Related ONTAP commands

- `security login create`
- `security login modify`
- `security login password`
- `security login lock`
- `security login unlock`

Learn more

- DOC /security/accounts/{owner.uuid}/{name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID
name	string	path	True	User account name

Request Body

Name	Type	Description
applications	array[account_application]	

Name	Type	Description
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
password	string	Password for the account. The password can contain a mix of lower and upper case alphabetic characters, digits, and special characters.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "applications": [
    {
      "application": "string",
      "authentication_methods": [
        "string"
      ],
      "second_authentication_method": "string"
    }
  ],
  "comment": "string",
  "password": "string",
  "password_hash_algorithm": "sha512",
  "role": {
    "name": "admin"
  },
  "scope": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1261215	The role was not found.
1261218	The user was not found.
1263343	Cannot lock user with password not set or non-password authentication method.
5636096	Cannot perform the operation for this user account since the password is not set.
5636097	The operation for user account failed since user password is not set.

Error Code	Description
5636100	Modification of a service-processor user's role to a non-admin role is not supported.
5636125	The operation not supported on autosupport user account which is reserved.
5636129	The role does not exist.
5636136	Specifying "is_ns_switch_group" as "true" is supported only for authentication method "nsswitch".
5636154	For mixed-version cluster the second authentication method parameter is supported for SSH and Service Processor (SP) applications only.
5636159	For a given user and application, if the second-authentication-method is specified, only one such login entry is supported.
5636164	The authentication method and the second authentication method cannot be any combination of 'nsswitch' and 'password'.
5636165	Second authentication method is not supported for NIS or LDAP group based accounts.
5636197	LDAP fastbind combination for application and authentication method is not supported.
5636198	LDAP fastbind authentication is supported only for nsswitch.
5636212	TOTP is supported only when the primary authentication method is password or public key.
5636214	Configuring the user with TOTP as a secondary authentication method requires an effective cluster version of 9.13.1 or later.
5636223	Specifying "is_ns_switch_group" as "true" is supported only for SSH, ONTAPI and HTTP applications.
5636224	Configuring a Service Processor (SP) user with two-factor authentication requires an effective cluster version of 9.15.1 or later.
5636225	For a Service Processor (SP) user, the second factor of authentication must be one of publickey or none.
5636226	Internal error. Failed to check for ONTAP capability.
5636233	User modification failed because LDAP is not configured for the SVM or the LDAP connection is not secure.
7077896	Cannot lock the account of the last console admin user.

Error Code	Description
7077906	A role with that name has not been defined for the Vserver.
7077911	The user is not configured to use the password authentication method.
7077918	The password cannot contain the username.
7077919	The minimum length for new password does not meet the policy.
7077920	The new password must have both letters and numbers.
7077921	The minimum number of special characters required do not meet the policy.
7077924	The new password must be different than last N passwords.
7077925	The new password must be different to the old password.
7077929	Cannot lock user with password not set or non-password authentication method.
7077940	The password exceeds maximum supported length.
7077941	Defined password composition exceeds the maximum password length of 128 characters.
7078900	An aAdmin password is not set. Set the password by including it in the request.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

account_application

Name	Type	Description
application	string	Applications
authentication_methods	array[string]	
is_ldap_fastbind	boolean	Optional property that specifies the mode of authentication as LDAP Fastbind.
is_ns_switch_group	boolean	Optional property that specifies whether the user is an LDAP or NIS group.
second_authentication_method	string	An optional additional authentication method for multi-factor authentication (MFA). This property is only supported for SSH (*ssh*) and Service Processor (*service_processor*) applications. It is ignored for all other applications. Time-based One-Time Passwords (TOTPs) are only supported with the authentication method password or public key. For the Service Processor (*service_processor*) application, *none* and *publickey* are the only supported enum values.

owner

Owner name and UUID that uniquely identifies the user account.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

Name	Type	Description
name	string	Role name

account

Name	Type	Description
applications	array[account_application]	
comment	string	Optional comment for the user account.
locked	boolean	Locked status of the account.
password	string	Password for the account. The password can contain a mix of lower and upper case alphabetic characters, digits, and special characters.
password_hash_algorithm	string	Password hash algorithm used to generate a hash of the user's password for password matching.To modify "password_hash_algorithm", use REST API "/api/security/authentication/password".
role	role	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage the anti-ransomware package

Security anti-ransomware endpoint overview

Overview

This API displays and manages the anti-ransomware package version.

Examples

Retrieving the anti-ransomware package version of all nodes in the cluster.

The following example shows how to retrieve anti-ransomware package version.

```
# The API:
GET /security/anti-ransomware

# The call:
curl -X GET "https://<mgmt-ip>/api/security/anti-ransomware" -H "accept:
application/hal+json"

# The response:
{
"nodes": [
  {
    "name": "sti11-vsim-ucs573i",
    "version": "1.0"
  },
  {
    "name": "sti11-vsim-ucs573j",
    "version": "1.0"
  }
],
"_links": {
  "self": {
    "href": "/api/security/anti-ransomware/"
  }
}
}
```

Updating the anti-ransomware package

The following example shows how to update the anti-ransomware package on the cluster.

```
# The API:
PATCH /security/anti-ransomware

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/anti-ransomware" -H "accept:
application/hal+json" -d '{"uri": "http://server/package"}'

# The response:
{
"job": {
  "uuid": "74d0faef-3e1a-11ef-af89-005056ac6d8a",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/74d0faef-3e1a-11ef-af89-005056ac6d8a"
    }
  }
}
}
```

The call to update the anti-ransomware package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

```
# The API:
/api/cluster/jobs/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/74d0faef-3e1a-11ef-af89-
005056ac6d8a" -H "accept: application/hal+json"

# The response:
{
"uuid": "74d0faef-3e1a-11ef-af89-005056ac6d8a",
"description": "PATCH /api/security/anti-ransomware",
"state": "success",
"message": "success",
"code": 0,
"_links": {
  "self": {
    "href": "/api/cluster/jobs/74d0faef-3e1a-11ef-af89-005056ac6d8a"
  }
}
}
```

Retrieve the anti-ransomware version of the nodes in the cluster

GET `/security/anti-ransomware`

Introduced In: 9.16

Retrieves the anti-ransomware package version of the nodes in the cluster.

Related ONTAP commands

- `security anti-ransomware show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
nodes	array[anti_ransomware_node]	
uri	string	URI of the anti-ransomware package through a server

Example response

```
{
  "nodes": [
    {
      "name": "node1",
      "version": "1.0"
    }
  ],
  "uri": "http://server/package"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917775	Operation is not supported on offline volumes.
203161606	Failed to check the "anti-ransomware-state" of the volume.
203162108	Operation is not supported on volumes that contain LUNs or namespaces.
203162109	Operation is not supported on an anti-ransomware disable-in-progress volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

anti_ransomware_node

Name	Type	Description
name	string	Name of the node.
version	string	Anti-ransomware version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the anti-ransomware package on the cluster

PATCH `/security/anti-ransomware`

Introduced In: 9.16

Updates the anti-ransomware package on the cluster.

Required properties

- `uri` - URI of the anti-ransomware package

Related ONTAP commands

- `security anti-ransomware update-package-from-uri`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
nodes	array[anti_ransomware_node]	
uri	string	URI of the anti-ransomware package through a server

Example request

```
{
  "nodes": [
    {
      "name": "node1",
      "version": "1.0"
    }
  ],
  "uri": "http://server/package"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
203161684	Autonomous Ransomware Protection (ARP) package file must be either a .tar or .tgz file.
203161685	Autonomous Ransomware Protection (ARP) package file download failed.
203161686	Autonomous Ransomware Protection (ARP) package file unzip failed.
203161687	Autonomous Ransomware Protection (ARP) package file untar failed.
203161688	Autonomous Ransomware Protection (ARP) package archive invalid. No ARP version file found.
203161689	Internal error. Filesystem error while installing Autonomous Ransomware Protection (ARP) package file.
203161690	Autonomous Ransomware Protection (ARP) package update requires an effective cluster version of 9.16.1 or later.
203161691	Autonomous Ransomware Protection (ARP) package file is invalid. The checksum verification of the ARP configuration files failed.
203161692	Autonomous Ransomware Protection (ARP) package update failed because one or more nodes are not healthy.
203161694	Failed to update the Autonomous Ransomware Protection (ARP) package file because the `uri` property was not specified.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

anti_ransomware_node

Name	Type	Description
name	string	Name of the node.
version	string	Anti-ransomware version.

anti_ransomware

Name	Type	Description
nodes	array[anti_ransomware_node]	
uri	string	URI of the anti-ransomware package through a server

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View suspect files generated by anti-ransomware

Security anti-ransomware suspects endpoint overview

Retrieving information on suspected files

The suspect GET API retrieves a list of recently suspected files potentially attacked by ransomware.

Retrieve information on the suspects generated by anti-ransomware analytics

GET `/security/anti-ransomware/suspects`

Introduced In: 9.10

Retrieves information on the suspects generated by the anti-ransomware analytics.

Related ONTAP commands

- `security anti-ransomware volume attack generate-report`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
file.format	string	query	False	Filter by file.format
file.path	string	query	False	Filter by file.path
file.name	string	query	False	Filter by file.name
file.reason	string	query	False	Filter by file.reason • Introduced in: 9.11

Name	Type	In	Required	Description
file.suspect_time	string	query	False	Filter by file.suspect_time
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of records
records	array[anti_ransomware_suspect]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "file": {
        "format": "pdf",
        "name": "test_file",
        "path": "d1/d2/d3",
        "reason": "High Entropy",
        "suspect_time": "2021-05-12 11:00:16 -0400"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

file

Name	Type	Description
format	string	File format of the suspected file.
name	string	Name of the suspected file.
path	string	Path of the suspected file.
reason	string	Reason behind this file being suspected
suspect_time	string	Time when the file was detected as a potential suspect in date-time format.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

anti_ransomware_suspect

File suspected to be potentially attacked by ransomware.

Name	Type	Description
_links	_links	
file	file	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete suspect files

Security anti-ransomware suspects volume.uuid endpoint overview

The suspects DELETE API clears all the suspect files for a volume from the list of potential suspects.

Clear suspect files of a volume

DELETE `/security/anti-ransomware/suspects/{volume.uuid}`

Introduced In: 9.10

Clears either all the suspect files of a volume or suspect files of a volume based on file format or suspect time provided.

Related ONTAP commands

- `security anti-ransomware volume attack clear-suspect`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Identification of the Anti-ransomware suspect file for the deletion. • format: uuid
is_false_positive	boolean	query	False	Specifies whether the suspected ransomware activity is a false positive or not. • Default value:
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
203161673	Operation is not supported on a data protection volume.
203162105	Clearing a suspect by specifying the file format is not supported when an attack is detected by encryption_percentage_analysis.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage data-entropy statistics

Security anti-ransomware volume entropy-stats endpoint overview

Overview

This API returns the percentage of data classified as encrypted using an entropy algorithm, measured at various time intervals at the volume level. If no volume UUID is specified, entropy statistics of all the volumes will be returned.
The entropy_stats_type parameter can be used to retrieve statistics with sub_hourly, hourly, or daily granularity. Additionally, it can be used to identify intervals that exhibited high (high_enc_pct) percentages of encrypted
data. If no type is specified, all types of entropy statistics will be returned for the volumes.

Examples

Retrieving volume stats

In this example, the API returns the data-entropy statistics for the volumes.

```
# The API:
/security/anti-ransomware/volume/entropy-stats

# The call:
curl -X GET "https://<mgmt-ip>/api/security/anti-
ransomware/volume/entropy-stats" -H "accept: application/json"

# The response:
{
"records": [
  {
     "volume": {
     "uuid": "61edb8bb-b7d1-11ef-932d-005056bbaeff",
     "name": "v2"
     },
     "entropy_stats_type": "sub_hourly",
     "timestamp": "2024-12-13T03:36:24-05:00",
     "data_written_in_bytes": 13249687,
     "encryption_percentage": 51,
     "duration": "PT10M21S",
     "_links": {
      "self": {
       "href": "/api/security/anti-ransomware/volume/entropy-
stats/61edb8bb-b7d1-11ef-932d-005056bbaeff/sub_hourly/2024-12-
13T03%3A36%3A24-05%3A00"
      }
     }
  },
  {
```

```
      "volume": {
      "uuid": "61edb8bb-b7d1-11ef-932d-005056bbaeff",
      "name": "v2"
      },
      "entropy_stats_type": "hourly",
      "timestamp": "2024-12-13T04:16:06-05:00",
      "data_written_in_bytes": 13249687,
      "encryption_percentage": 51,
      "duration": "PT1H2M36S",
      "_links": {
       "self": {
        "href": "/api/security/anti-ransomware/volume/entropy-
stats/61edb8bb-b7d1-11ef-932d-005056bbaeff/hourly/2024-12-13T04%3A16%3A06-
05%3A00"
       }
      }
  }
],
"num_records": 20,
"_links": {
 "self": {
   "href": "/api/security/anti-ransomware/volume/entropy-stats/61edb8bb-
b7d1-11ef-932d-005056bbaeff"
  }
 }
}
```


Retrieve data-entropy statistics for volumes

GET `/security/anti-ransomware/volume/entropy-stats`

Introduced In: 9.17

Retrieves the data-entropy statistics for the volumes.

Parameters

Name	Type	In	Required	Description
entropy_stats_type	string	query	False	Filter by entropy_stats_type
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name

Name	Type	In	Required	Description
data_written_in_bytes	integer	query	False	Filter by data_written_in_bytes
duration	string	query	False	Filter by duration
encryption_percentage	integer	query	False	Filter by encryption_percentage
timestamp	string	query	False	Filter by timestamp
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "data_written_in_bytes": 0,
      "duration": "PT15M",
      "encryption_percentage": 0,
      "entropy_stats_type": "string",
      "timestamp": "string",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

records

Volume data-entropy statistics derived from block analysis.

Name	Type	Description
_links	_links	
data_written_in_bytes	integer	The amount of data written.

Name	Type	Description
duration	string	The duration of the interval associated with this statistic. The duration is represented in ISO-8601 standard format.
encryption_percentage	integer	The percentage of data that is encrypted.
entropy_stats_type	string	Volume metrics are retrieved based on this statistic type.
timestamp	string	Start time in date-time format.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a data-entropy statistic for a volume

GET `/security/anti-ransomware/volume/entropy-stats/{volume.uuid}/{entropy_stats_type}/{timestamp}`

Introduced In: 9.17

Retrieves a data-entropy statistic for the volumes.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	The UUID of the volume.
entropy_stats_type	string	path	True	The type of entropy statistics. • enum: ["sub_hourly", "hourly", "daily", "high_enc_pct"]
timestamp	string	path	True	The timestamp of the statistics. • format: date-time
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
data_written_in_bytes	integer	The amount of data written.
duration	string	The duration of the interval associated with this statistic. The duration is represented in ISO-8601 standard format.
encryption_percentage	integer	The percentage of data that is encrypted.
entropy_stats_type	string	Volume metrics are retrieved based on this statistic type.
timestamp	string	Start time in date-time format.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "data_written_in_bytes": 0,
  "duration": "PT15M",
  "encryption_percentage": 0,
  "entropy_stats_type": "string",
  "timestamp": "string",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View and update audit settings

Security audit endpoint overview

Overview

This API controls what is logged to the audit log files. All operations that make changes are always logged and cannot be disabled. The PATCH request updates administrative audit settings for GET requests. All fields are optional for a PATCH request. A GET request retrieves administrative audit settings for GET requests.
+

Examples

Retrieving administrative audit settings for GET requests

The following example shows the administrative audit settings for GET requests.
+

```
# The API:
/api/security/audit

# The call:
curl -X GET "https://<cluster-ip>/api/security/audit"

# The response:
{
"cli": false,
"http": false,
"ontapi": false,
"_links": {
    "self": {
        "href": "/api/security/audit"
    }
}
}
```

Updating administrative audit settings for GET requests

The following example updates the administrative audit settings for GET requests
+

```
# The API:
/api/security/audit

# The call:
curl -X PATCH "https://<cluster-ip>/api/security/audit" -d '{"cli": false,
"http": true, "ontapi": true}'
```

Retrieve administrative audit settings for GET requests

GET `/security/audit`

Introduced In: 9.6

Retrieves administrative audit settings for GET requests.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
cli	boolean	Enable auditing of CLI GET Operations. Valid in PATCH
http	boolean	Enable auditing of HTTP GET Operations. Valid in PATCH

Name	Type	Description
ontapi	boolean	Enable auditing of ONTAP API GET operations. Valid in PATCH • Introduced in: 9.6 • x-nullable: true

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update administrative audit settings for GET requests

PATCH `/security/audit`

Introduced In: 9.6

Updates administrative audit settings for GET requests.
All of the fields are optional. An empty body will make no changes.

Request Body

Name	Type	Description
cli	boolean	Enable auditing of CLI GET Operations. Valid in PATCH
http	boolean	Enable auditing of HTTP GET Operations. Valid in PATCH
ontapi	boolean	Enable auditing of ONTAP API GET operations. Valid in PATCH • Introduced in: 9.6 • x-nullable: true

Response

```
Status: 200, Ok
```

Name	Type	Description
cli	boolean	Enable auditing of CLI GET Operations. Valid in PATCH
http	boolean	Enable auditing of HTTP GET Operations. Valid in PATCH
ontapi	boolean	Enable auditing of ONTAP API GET operations. Valid in PATCH • Introduced in: 9.6 • x-nullable: true

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

security_audit

Name	Type	Description
cli	boolean	Enable auditing of CLI GET Operations. Valid in PATCH
http	boolean	Enable auditing of HTTP GET Operations. Valid in PATCH
ontapi	boolean	Enable auditing of ONTAP API GET operations. Valid in PATCH • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Forward audit logs to syslog/splunk servers

Security audit destinations endpoint overview

Overview

This API controls the forwarding of audit log information to remote syslog/splunk servers. Multiple destinations can be configured and all audit records are forwarded to all destinations.

A GET operation retrieves information about remote syslog/splunk server destinations.
A POST operation creates a remote syslog/splunk server destination.
A GET operation on /security/audit/destinations/{address}/{port} retrieves information about the syslog/splunk server destination given its address and port number.
A PATCH operation on /security/audit/destinations/{address}/{port} updates information about the syslog/splunk server destination given its address and port number.
A DELETE operation on /security/audit/destinations/{address}/{port} deletes a syslog/splunk server destination given its address and port number.

Overview of fields used for creating a remote syslog/splunk destination

The fields used for creating a remote syslog/splunk destination fall into the following categories

Required properties

All of the following fields are required for creating a remote syslog/splunk destination

- `address`

Optional properties

All of the following fields are optional for creating a remote syslog/splunk destination

- `port`
- `ipspace`
- `protocol`
- `facility`
- `verify_server`
- `message_format` (Can be either "legacy_netapp" or "rfc_5424")
- `timestamp_format_override` (Can be either "no_override", "rfc_3164", "iso_8601_utc" or "iso_8601_local_time")
- `hostname_format_override` (Can be either "no_override", "fqdn" or "hostname_only")
  +

Examples

Retrieving remote syslog/splunk server destinations

The following example shows remote syslog/splunk server destinations

+

```
# The API:
/api/security/audit/destinations

# The call:
curl -X GET "https://<cluster-ip>/api/security/audit/destinations"

# The response:
{
"records": [
  {
    "address": "1.1.1.1",
    "port": 514,
    "_links": {
      "self": {
        "href": "/api/security/audit/destinations/1.1.1.1/514"
      }
  }
}
 ],
 "num_records": 1,
 "_links": {
   "self": {
     "href": "/api/security/audit/destinations"
   }
 }
}
```

Creating remote syslog/splunk server destinations

The following example creates remote syslog/splunk server destinations.
+

```
# The API:
/api/security/audit/destinations

# The call:
curl -X POST "https://<cluster-
ip>/api/security/audit/destinations?force=true" -d '{ "address":
"1.1.1.1", "port": 514, "protocol": "udp_unencrypted", "facility":
"kern"}'
```

Retrieving a remote syslog/splunk server destination given its destination address and port number

The following example retrieves a remote syslog/splunk server destination given its destination address and port number.
+

```
# The API:
/api/security/audit/destinations/{address}/{port}

# The call:
curl -X GET "https://<cluster-
ip>/api/security/audit/destinations/1.1.1.1/514"

# The response:
{
"address": "1.1.1.1",
"port": 514,
"ipspace": {
  "name": "Default",
  "uuid": "a97a3549-f7ae-11ec-b6bc-005056a7c8ff"
},
"protocol": "udp_unencrypted",
"facility": "kern",
"verify_server": false,
"message_format": "legacy_netapp",
"timestamp_format_override": "no_override",
"hostname_format_override": "no_override",
"_links": {
  "self": {
    "href": "/api/security/audit/destinations/1.1.1.1/514"
  }
}
}
```

Updating a remote syslog/splunk server destination given its destination address and port number

The following example updates a remote syslog/splunk server destination configuration given its destination address and port number.
+

```
# The API:
/api/security/audit/destinations/{address}/{port}

# The call:
curl -X PATCH "https://<cluster-
ip>/api/security/audit/destinations/1.1.1.1/514" -d '{"facility":
"user"}'
```

Deleting a remote syslog/splunk server destination given its destination address and port number

The following example deletes a remote syslog/splunk server destination configuration given its destination address and port number.
+

```
# The API:
/api/security/audit/destinations/{address}/{port}

# The call:
curl -X DELETE "https://<cluster-
ip>/api/security/audit/destinations/1.1.1.1/514"
```

Define a remote syslog or splunk server to receive audit information

GET `/security/audit/destinations`

Introduced In: 9.6

Defines a remote syslog/splunk server for sending audit information to.

Parameters

Name	Type	In	Required	Description
protocol	string	query	False	Filter by protocol
message_format	string	query	False	Filter by message_format • Introduced in: 9.13
port	integer	query	False	Filter by port
ipspace.name	string	query	False	Filter by ipspace.name • Introduced in: 9.12
ipspace.uuid	string	query	False	Filter by ipspace.uuid • Introduced in: 9.12

Name	Type	In	Required	Description
verify_server	boolean	query	False	Filter by verify_server
facility	string	query	False	Filter by facility
address	string	query	False	Filter by address
timestamp_format_override	string	query	False	Filter by timestamp_format_override • Introduced in: 9.13
hostname_format_override	string	query	False	Filter by hostname_format_override • Introduced in: 9.13
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False
Limit the number of records returned.	return_timeout	integer	query	False

Name	Type	In	Required	Description
The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[security_audit_log_forward]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "address": "1.1.1.1",
      "facility": "string",
      "hostname_format_override": "string",
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "message_format": "string",
      "port": 514,
      "protocol": "string",
      "timestamp_format_override": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

security_audit_log_forward

Name	Type	Description
address	string	Destination syslog|splunk host to forward audit records to. This can be an IP address (IPv4|IPv6) or a hostname.
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	

Name	Type	Description
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
port	integer	Destination Port. The default port depends on the protocol chosen: For un-encrypted destinations the default port is 514. For encrypted destinations the default port is 6514.
protocol	string	Log forwarding protocol
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server's certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server's certificate. Setting "verify_server" to "false" will not enforce validation of remote server's certificate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Define the remote syslog or splunk server information

POST `/security/audit/destinations`

Introduced In: 9.6

Configures remote syslog/splunk server information.

Required properties

All of the following fields are required for creating a remote syslog/splunk destination

- `address`

Optional properties

All of the following fields are optional for creating a remote syslog/splunk destination

- `port` (1 - 65535)
- `ipspace`
- `protocol`
- `facility`
- `verify_server` (Can only be "true" when protocol is "tcp_encrypted")
- `message_format` (Can be either "legacy-netapp" or "rfc-5424")
- `timestamp_format_override` (Can be either "no-override", "rfc-3164", "iso-8601-utc" or "iso-8601-local-time")
- `hostname_format_override` (Can be either "no-override", "fqdn" or "hostname-only")

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	Skip the Connectivity Test • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
address	string	Destination syslog|splunk host to forward audit records to. This can be an IP address (IPv4|IPv6) or a hostname.

Name	Type	Description
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
port	integer	Destination Port. The default port depends on the protocol chosen: For un-encrypted destinations the default port is 514. For encrypted destinations the default port is 6514.
protocol	string	Log forwarding protocol
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server’s certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server’s certificate. Setting "verify_server" to "false" will not enforce validation of remote server’s certificate.

Example request

```
{
  "address": "1.1.1.1",
  "facility": "string",
  "hostname_format_override": "string",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "message_format": "string",
  "port": 514,
  "protocol": "string",
  "timestamp_format_override": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
num_records	integer	Number of records
records	array[security_audit_log_forward]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "address": "1.1.1.1",
      "facility": "string",
      "hostname_format_override": "string",
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "message_format": "string",
      "port": 514,
      "protocol": "string",
      "timestamp_format_override": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
15661	The object specified could not be found
13114	Internal error
13115	Invalid input

Error Code	Description
4522285	Server verification cannot be enabled because it requires a protocol with encryption. Encryption can be selected using the protocol field.
9240603	Cannot ping destination host. Verify connectivity to desired host or skip the connectivity check with the -force parameter.
327698	Failed to create RPC client to destination host
9240609	Cannot connect to destination host.
9240604	Cannot resolve the destination host.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

security_audit_log_forward

Name	Type	Description
address	string	Destination syslog|splunk host to forward audit records to. This can be an IP address (IPv4|IPv6) or a hostname.
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
port	integer	Destination Port. The default port depends on the protocol chosen: For un-encrypted destinations the default port is 514. For encrypted destinations the default port is 6514.
protocol	string	Log forwarding protocol

Name	Type	Description
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server's certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server's certificate. Setting "verify_server" to "false" will not enforce validation of remote server's certificate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete the remote syslog or splunk server information

DELETE `/security/audit/destinations/{address}/{port}`

Introduced In: 9.6

Deletes remote syslog/splunk server information.

Parameters

Name	Type	In	Required	Description
address	string	path	True	IP address of remote syslog/splunk server.
port	integer	path	True	Port number of remote syslog/splunk server.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the remote syslog or splunk server information

GET `/security/audit/destinations/{address}/{port}`

Introduced In: 9.6

Defines a remote syslog/splunk server for sending audit information to.

Parameters

Name	Type	In	Required	Description
address	string	path	True	IP address of remote syslog/splunk server.
port	integer	path	True	Port number of remote syslog/splunk server.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
address	string	Destination syslog|splunk host to forward audit records to. This can be an IP address (IPv4|IPv6) or a hostname.
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
port	integer	Destination Port. The default port depends on the protocol chosen: For un-encrypted destinations the default port is 514. For encrypted destinations the default port is 6514.
protocol	string	Log forwarding protocol
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server’s certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server’s certificate. Setting "verify_server" to "false" will not enforce validation of remote server’s certificate.

Example response

```
{
  "address": "1.1.1.1",
  "facility": "string",
  "hostname_format_override": "string",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "message_format": "string",
  "port": 514,
  "protocol": "string",
  "timestamp_format_override": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipspace

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the remote syslog or splunk server information

PATCH `/security/audit/destinations/{address}/{port}`

Introduced In: 9.6

Updates remote syslog/splunk server information.

Parameters

Name	Type	In	Required	Description
address	string	path	True	IP address of remote syslog/splunk server.
port	integer	path	True	Port number of remote syslog/splunk server.

Request Body

Name	Type	Description
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server's certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server's certificate. Setting "verify_server" to "false" will not enforce validation of remote server's certificate.

Example request

```
{
  "facility": "string",
  "hostname_format_override": "string",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "message_format": "string",
  "timestamp_format_override": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server's certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server's certificate. Setting "verify_server" to "false" will not enforce validation of remote server's certificate.

Example response

```
{
  "facility": "string",
  "hostname_format_override": "string",
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "message_format": "string",
  "timestamp_format_override": "string"
}
```

Error

```
Status: Default, Default
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipspace

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

security_audit_log_forward

Name	Type	Description
facility	string	This is the standard Syslog Facility value that is used when sending audit records to a remote server.
hostname_format_override	string	Syslog Hostname Format Override
ipspace	ipspace	
message_format	string	Syslog message format to be used. legacy_netapp format (variation of RFC-3164) is default message format.
timestamp_format_override	string	Syslog Timestamp Format Override.
verify_server	boolean	This is only applicable when the protocol is tcp_encrypted. This controls whether the remote server's certificate is validated. Setting "verify_server" to "true" will enforce validation of remote server's certificate. Setting "verify_server" to "false" will not enforce validation of remote server's certificate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View administrative audit logs

Security audit messages endpoint overview

Overview

These APIs return audit log records. The GET requests retrieves all audit log records. An audit log record contains information such as timestamp, node name, index and so on.
+

Example

Retrieving audit log records

The following example shows the audit log records.
Note: The index field is used to order the audit log messages before they are displayed. If multiple entries for the same node and timestamp occur simultaneously, the index assigns an order to ensure logical consistency.
+

```
# The API:
/api/security/audit/messages

# The call:
curl -X GET "https://<cluster-ip>/api/security/audit/messages"

# The response:
{
"records": [
  {
    "timestamp": "2019-03-08T11:03:32-05:00",
    "node": {
      "name": "node1",
      "uuid": "bc9af9da-41bb-11e9-a3db-005056bb27cf",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/bc9af9da-41bb-11e9-a3db-
005056bb27cf"
        }
      }
    },
    "index": 4294967299,
    "application": "http",
    "location": "172.21.16.89",
    "user": "admin",
    "input": "GET /api/security/audit/destinations/",
    "state": "pending",
    "scope": "cluster",
    "role": "admin"
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/audit/messages"
  }
}
}
```

Retrieve the administrative audit log viewer

GET `/security/audit/messages`

Introduced In: 9.6

Retrieves the administrative audit log viewer.

Parameters

Name	Type	In	Required	Description
state	string	query	False	Filter by state
location	string	query	False	Filter by location
application	string	query	False	Filter by application
role	string	query	False	Filter by role • Introduced in: 9.17
command_id	string	query	False	Filter by command_id
svm.name	string	query	False	Filter by svm.name
input	string	query	False	Filter by input
scope	string	query	False	Filter by scope
message	string	query	False	Filter by message
timestamp	string	query	False	Filter by timestamp
index	integer	query	False	Filter by index
session_id	string	query	False	Filter by session_id
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
user	string	query	False	Filter by user
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[security_audit_log]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": "string",
      "command_id": "string",
      "index": 0,
      "input": "string",
      "location": "string",
      "message": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "role": "string",
      "scope": "string",
      "session_id": "string",
      "state": "string",
      "svm": {
        "name": "string"
      },
      "timestamp": "string",
      "user": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Node where the audit message resides.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

This is the SVM through which the user connected.

Name	Type	Description
name	string	

security_audit_log

Name	Type	Description
_links	_links	
application	string	This identifies the "application" by which the request was processed.

Name	Type	Description
command_id	string	This is the command ID for this request. Each command received on a CLI session is assigned a command ID. This enables you to correlate a request and response.
index	integer	Internal index for accessing records with the same time and node. This is a 64-bit unsigned value that is used to order the audit log messages before they are displayed. If multiple entries for the same node and timestamp occur simultaneously, the index assigns an order to ensure logical consistency.
input	string	The request.
location	string	This identifies the location of the remote user. This is an IP address or "console".
message	string	This is an optional field that might contain "error" or "additional information" about the status of a command.
node	node	Node where the audit message resides.
role	string	Role of the remote user.
scope	string	Set to "svm" when the request is on a data SVM; otherwise set to "cluster".
session_id	string	This is the session ID on which the request is received. Each SSH session is assigned a session ID. Each http/ontapi/snmp request is assigned a unique session ID.
state	string	State of of this request.

Name	Type	Description
svm	svm	This is the SVM through which the user connected.
timestamp	string	Log entry timestamp. Valid in URL
user	string	Username of the remote user.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage data SVM account information

Security authentication cluster ad-proxy endpoint overview

Overview

This API configures data SVM account information at the Active Directory. For Active Directory domain-based authentication for cluster accounts, a data SVM must be configured and registered as a machine account at the Active Directory. All authentication requests are proxied through this SVM.

Examples

Creating a data SVM proxy for domain-based authentication for cluster accounts

```
# The API:
POST  "/api/security/authentication/cluster/ad-proxy"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/ad-
proxy" -d '{"svm.uuid":"13f87d78-70c7-11e9-b722-0050568ec89f"}'
```

Updating a data SVM proxy for domain-based authentication for cluster accounts

```
# The API:
PATCH "/api/security/authentication/cluster/ad-proxy"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/authentication/cluster/ad-
proxy" -d '{"svm.uuid":"13f87d78-70c7-11e9-b722-0050568ec89f"}'
```

Retrieving a data SVM proxy for domain-based authentication for cluster accounts

```
# The API:
GET "/api/security/authentication/cluster/ad-proxy"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/ad-
proxy"

# The response:
{
"svm": {
  "uuid": "512eab7a-6bf9-11e9-a896-005056bb9ce1",
  "name": "vs2",
  "_links": {
    "self": {
      "href": "/api/svm/svms/512eab7a-6bf9-11e9-a896-005056bb9ce1"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/security/authentication/cluster/ad-proxy"
  }
}
}
```

Delete a data SVM configured as a tunnel

DELETE `/security/authentication/cluster/ad-proxy`

Introduced In: 9.7

Deletes the data SVM configured as a tunnel for Active Directory based authentication for cluster user accounts.

Related ONTAP commands

- `security login domain-tunnel delete`

Learn more

- DOC /security/authentication/cluster/ad-proxy
- DOC /security/accounts

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SVM information configured as an Active Directory domain-tunnel

GET `/security/authentication/cluster/ad-proxy`

Introduced In: 9.7

Retrieves SVM information configured as an Active Directory domain-tunnel.

Related ONTAP commands

- `security login domain-tunnel show`

Learn more

- DOC /security/authentication/cluster/ad-proxy
- DOC /security/accounts

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a data SVM configured as a tunnel

PATCH `/security/authentication/cluster/ad-proxy`

Introduced In: 9.7

Updates the data SVM configured as a tunnel for Active Directory based authentication for cluster user accounts.

Related ONTAP commands

- `security login domain-tunnel modify`

Learn more

- DOC /security/authentication/cluster/ad-proxy
- DOC /security/accounts

Request Body

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621516	This operation is only supported on a data SVM.
2621706	The specified `svm.uuid` and `svm.name` refer to different SVMs.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cluster_ad_proxy

The SVM configured as proxy for Active Directory authentication of cluster accounts.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Configure a data SVM as a proxy

POST `/security/authentication/cluster/ad-proxy`

Introduced In: 9.7

Configures a data SVM as a proxy for Active Directory based authentication for cluster user accounts.

Required properties

- `svm.name` or `svm.uuid` - Name and UUID of the SVM for a cluster user account.

Related ONTAP commands

- `security login domain-tunnel create`

Learn more

- DOC /security/authentication/cluster/ad-proxy
- DOC /security/accounts

Request Body

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621516	This operation is only supported on a data SVM.
2621706	The specified `svm.uuid` and `svm.name` refer to different SVMs.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

cluster_ad_proxy

The SVM configured as proxy for Active Directory authentication of cluster accounts.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage LDAP server configuration

Security authentication cluster LDAP endpoint overview

Overview

LDAP servers are used to centrally maintain user information. LDAP configurations must be set up to look up information stored in the LDAP directory on the external LDAP servers. This API is used to retrieve and manage
cluster LDAP server configurations.

Examples

Retrieving the cluster LDAP information

The cluster LDAP GET request retrieves the LDAP configuration of the cluster.

The following example shows how a GET request is used to retrieve the cluster LDAP information:

```
# The API:
/api/security/authentication/cluster/ldap

# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/ldap"
-H "accept: application/hal+json"

# The response:
{
"servers": [
  "10.10.10.10",
  "domainB.example.com"
],
"schema": "ad_idmu",
"port": 389,
"min_bind_level": "anonymous",
"bind_dn": "cn=Administrators,cn=users,dc=domainA,dc=example,dc=com",
"base_dn": "dc=domainA,dc=example,dc=com",
"base_scope": "subtree",
"use_start_tls": true,
"session_security": "none",
"try_channel_binding": true,
"_links": {
  "self": {
    "href": "/api/security/authentication/cluster/ldap"
  }
}
}
```

Creating the cluster LDAP configuration

The cluster LDAP POST operation creates an LDAP configuration for the cluster.

The following example shows how to issue a POST request with all of the fields specified:

```
# The API:
/api/security/authentication/cluster/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/ldap"
-H "accept: application/hal+json" -H "Content-Type: application/json" -d
"{ \"servers\": [ \"10.10.10.10\", \"domainB.example.com\" ], \"schema\":
\"ad_idmu\", \"port\": 389, \"min_bind_level\": \"anonymous\",
\"bind_dn\": \"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"base_scope\": \"subtree\", \"use_start_tls\": false,
\"session_security\": \"none\"}"
```

The following example shows how to issue a POST request with a number of optional fields not specified:

```
# The API:
/api/security/authentication/cluster/ldap

# The call:
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/ldap"
-H "accept: application/hal+json" -H "Content-Type: application/json" -d
"{ \"port\": 389, \"bind_dn\":
\"cn=Administrators,cn=users,dc=domainA,dc=example,dc=com\",
\"bind_password\": \"abc\", \"base_dn\": \"dc=domainA,dc=example,dc=com\",
\"session_security\": \"none\"}"
```

Updating the cluster LDAP configuration

The cluster LDAP PATCH request updates the LDAP configuration of the cluster.

The following example shows how a PATCH request is used to update the cluster LDAP configuration:

```
# The API:
/api/security/authentication/cluster/ldap

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/authentication/cluster/ldap"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"servers\": [ \"55.55.55.55\" ], \"schema\": \"ad_idmu\", \"port\": 636,
\"use_start_tls\": false }"
```

Deleting the cluster LDAP configuration

The cluster LDAP DELETE request deletes the LDAP configuration of the cluster.

The following example shows how a DELETE request is used to delete the cluster LDAP configuration:

```
# The API:
/api/security/authentication/cluster/ldap

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/security/authentication/cluster/ldap" -H "accept:
application/hal+json"
```

Delete the LDAP configuration for the cluster

DELETE `/security/authentication/cluster/ldap`

Introduced In: 9.6

Deletes the LDAP configuration of the cluster.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the LDAP configuration for the cluster

GET `/security/authentication/cluster/ldap`

Introduced In: 9.6

Retrieves the cluster LDAP configuration.

Related ONTAP commands

- `ldap show`
- `ldap check -vserver vs0`
- `ldap check-ipv6 -vserver vs0`

Important notes

- The status.code, status.dn_message, status.message, and status.state fields have the same status fields that are returned using the "ldap check" CLI command.
- Refer to the ipv4 or ipv6 objects available in the status field to get specific information about the code, dn_messages, or message and state information for ipv4 or ipv6.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Name	Type	Description
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind

Name	Type	Description
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "base_dn": "string",
  "base_scope": "string",
  "bind_dn": "string",
  "group_dn": "string",
  "group_membership_filter": "string",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "string",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "string",
  "netgroup_scope": "string",
  "port": 389,
  "schema": "string",
  "servers": [
    "string"
  ],
  "session_security": "string",
  "skip_config_validation": true,
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv4_state": "string",
    "ipv6": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
```

```
        "state": "string"
      },
      "ipv6_state": "string",
      "message": "string",
      "state": "string"
    },
    "user_dn": "string",
    "user_scope": "string"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.

Name	Type	Description
dn_message	array[string]	
ipv4	ipv4	
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the LDAP configuration for the cluster

PATCH `/security/authentication/cluster/ldap`

Introduced In: 9.6

Both mandatory and optional parameters of the LDAP configuration can be updated.
IPv6 must be enabled if IPv6 family addresses are specified. Configuring more than one LDAP server is recommended to avoid a single point of failure. Both FQDNs and IP addresses are supported for the `servers` property.
The LDAP servers are validated as part of this operation. LDAP validation fails in the following scenarios:

1. The server does not have LDAP installed.
2. The server is invalid.
3. The server is unreachable.

Request Body

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.

Name	Type	Description
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example request

```
{
  "base_dn": "string",
  "base_scope": "string",
  "bind_dn": "string",
  "bind_password": "string",
  "group_dn": "string",
  "group_membership_filter": "string",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "string",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "string",
  "netgroup_scope": "string",
  "port": 389,
  "schema": "string",
  "servers": [
    "string"
  ],
  "session_security": "string",
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv4_state": "string",
    "ipv6": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv6_state": "string",
    "message": "string",
    "state": "string"
```

```
  },
  "user_dn": "string",
  "user_scope": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4915203	The specified LDAP schema does not exist.
262222	The specified LDAP servers contain duplicate server entries.
4915229	DNS resolution failed due to an internal error. Contact technical support if this issue persists.
4915231	DNS resolution failed for one or more of the specified LDAP servers. Verify that a valid DNS server is configured.
23724132	DNS resolution failed for all the specified LDAP servers. Verify that a valid DNS server is configured.
4915234	Specified LDAP server is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast.
4915248	LDAP servers cannot be empty or "-". Specified FQDN is not valid because it is empty or "-" or it contains either special characters or "-" at the start or end of the domain.
4915251	STARTTLS and LDAPS cannot be used together
4915257	The LDAP configuration is not valid. Verify that the Distinguished Names and bind password are correct.
4915258	The LDAP configuration is not valid. Verify that the servers are reachable and that the network configuration is correct.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.

Error Code	Description
4915252	LDAP referral is not supported with STARTTLS, with session security levels sign, seal or with LDAPS.
4915244	RPC failure occurred during validation of the LDAP configuration.
4915265	The specified bind password or bind DN is invalid

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.
dn_message	array[string]	
ipv4	ipv4	

Name	Type	Description
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

cluster_ldap

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.

Name	Type	Description
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the LDAP configuration for the cluster

POST `/security/authentication/cluster/ldap`

Introduced In: 9.6

A cluster can have only one LDAP configuration. IPv6 must be enabled if IPv6 family addresses are specified.

Required properties

- `servers` - List of LDAP servers used for this client configuration.

Recommended optional properties

- `schema` - Schema template name.
- `port` - Port used to connect to the LDAP Servers.
- `ldaps_enabled` - Specifies whether or not LDAPS is enabled.
- `min_bind_level` - Minimum bind authentication level.
- `bind_dn` - Specifies the user that binds to the LDAP servers.
- `base_dn` - Specifies the default base DN for all searches.
- `bind_password` - Specifies the bind password for the LDAP servers.
- `base_scope` - Specifies the default search scope for LDAP queries.
- `use_start_tls` - Specifies whether or not to use Start TLS over LDAP connections.
- `session_security` - Specifies the level of security to be used for LDAP communications.
- `bind_as_cifs_server` - Indicates if CIFS server's credentials are used to bind to the LDAP server.
- `query_timeout` - Maximum time to wait for a query response from the LDAP server, in seconds.
- `user_dn` - User Distinguished Name (DN) used as the starting point in the LDAP directory tree for user lookups.
- `user_scope` - Default search scope for LDAP for user lookups.
- `group_dn` - Group Distinguished Name (DN) used as the starting point in the LDAP directory tree for group lookups.
- `group_scope` - Default search scope for LDAP for group lookups.
- `netgroup_dn` - Netgroup Distinguished Name (DN) used as the starting point in the LDAP directory tree for netgroup lookups.
- `netgroup_scope` - Default search scope for LDAP for netgroup lookups.
- `netgroup_byhost_dn` - Netgroup Distinguished Name (DN) used as the starting point in the LDAP directory tree for netgroup by host lookups.
- `netgroup_byhost_scope` - Default search scope for LDAP for netgroup by host lookups.
- `is_netgroup_byhost_enabled` - Specifies whether netgroup by host querying is enabled.
- `group_membership_filter` - Custom filter used for group membership lookup from an LDAP server.
- `skip_config_validation` - Indicates whether or not the validation for the specified LDAP configuration is disabled.

Default property values

- `schema` - *RFC-2307*
- `port` - *389*
- `ldaps_enabled` - *false*
- `min_bind_level` - *simple*
- `base_scope` - *subtree*

- `use_start_tls` - *false*
- `session_security` - *none*
- `query_timeout` - *3*
- `user_scope` - *subtree*
- `group_scope` - *subtree*
- `netgroup_scope` - *subtree*
- `netgroup_byhost_scope` - *subtree*
- `is_netgroup_byhost_enabled` - *false*
- `skip_config_validation` - *false*
- `try_channel_binding` - *true*

Configuring more than one LDAP server is recommended to avoid a single point of failure. Both FQDNs and IP addresses are supported for the `servers` property.
The LDAP servers are validated as part of this operation. LDAP validation fails in the following scenarios:

1. The server does not have LDAP installed.
2. The server is invalid.
3. The server is unreachable.

Request Body

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.

Name	Type	Description
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

Example request

```
{
  "base_dn": "string",
  "base_scope": "string",
  "bind_dn": "string",
  "bind_password": "string",
  "group_dn": "string",
  "group_membership_filter": "string",
  "group_scope": "string",
  "min_bind_level": "string",
  "netgroup_byhost_dn": "string",
  "netgroup_byhost_scope": "string",
  "netgroup_dn": "string",
  "netgroup_scope": "string",
  "port": 389,
  "schema": "string",
  "servers": [
    "string"
  ],
  "session_security": "string",
  "status": {
    "code": 65537300,
    "dn_message": [
      "string"
    ],
    "ipv4": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv4_state": "string",
    "ipv6": {
      "code": 65537300,
      "dn_messages": [
        "string"
      ],
      "message": "string",
      "state": "string"
    },
    "ipv6_state": "string",
    "message": "string",
    "state": "string"
```

```
  },
  "user_dn": "string",
  "user_scope": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of LDAP records.
records	array[ldap_service]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "ad_domain": "example.com",
      "base_dn": "dc=domainB,dc=example,dc=com",
      "base_scope": "string",
      "bind_dn":
"cn=Administrators,cn=users,dc=domainB,dc=example,dc=com",
      "bind_password": "abc",
      "group_dn": "cn=abc,users,dc=com",
      "group_membership_filter": "",
      "group_scope": "string",
      "min_bind_level": "string",
      "netgroup_byhost_dn": "cn=abc,users,dc=com",
      "netgroup_byhost_scope": "string",
      "netgroup_dn": "cn=abc,users,dc=com",
      "netgroup_scope": "string",
      "port": 389,
      "preferred_ad_servers": [
        "11.11.11.11"
      ],
      "schema": "ad_idmu",
      "servers": [
        [
          "10.10.10.10",
          "domainB.example.com"
        ]
      ],
      "session_security": "string",
      "status": {
        "code": 65537300,
        "dn_message": [
          "string"
        ],
        "ipv4": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv4_state": "string",
```

```
        "ipv6": {
          "code": 65537300,
          "dn_messages": [
            "string"
          ],
          "message": "string",
          "state": "string"
        },
        "ipv6_state": "string",
        "message": "string",
        "state": "string"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "user_dn": "cn=abc,users,dc=com",
      "user_scope": "string"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
4915203	The specified LDAP schema does not exist.
262222	The specified LDAP servers contain duplicate server entries.
4915229	DNS resolution failed due to an internal error. Contact technical support if this issue persists.
4915231	DNS resolution failed for one or more of the specified LDAP servers. Verify that a valid DNS server is configured.

Error Code	Description
23724132	DNS resolution failed for all the specified LDAP servers. Verify that a valid DNS server is configured.
4915234	The specified LDAP server is not supported because it is one of the following: multicast, loopback, 0.0.0.0, or broadcast.
4915248	LDAP servers cannot be empty or "-". Specified FQDN is invalid because it is empty or "-" or it contains either special characters or "-" at the start or end of the domain.
4915251	STARTTLS and LDAPS cannot be used together.
4915257	The LDAP configuration is invalid. Verify that bind-dn and bind password are correct.
4915258	The LDAP configuration is invalid. Verify that the servers are reachable and that the network configuration is correct.
13434916	The SVM is in the process of being created. Wait a few minutes, and then try the command again.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
4915252	LDAP referral is not supported with STARTTLS, with session security levels sign, seal or with LDAPS.
4915265	The specified bind password or bind DN is invalid

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ipv4

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

ipv6

Name	Type	Description
code	integer	Code corresponding to the error message. If there is no error, it is 0 to indicate success.
dn_messages	array[string]	
message	string	Provides additional details on the error.
state	string	Status of the LDAP service.

status

Name	Type	Description
code	integer	This field is no longer supported. Use ipv4.code or ipv6.code instead.
dn_message	array[string]	
ipv4	ipv4	

Name	Type	Description
ipv4_state	string	This field is no longer supported. Use ipv4.state instead.
ipv6	ipv6	
ipv6_state	string	This field is no longer supported. Use ipv6.state instead.
message	string	This field is no longer supported. Use ipv4.message or ipv6.message instead.
state	string	The status of the LDAP service for the SVM. The LDAP service is up if either `ipv4_state` or `ipv6_state` is up. The LDAP service is down if both `ipv4_state` and `ipv6_state` are down.

cluster_ldap

Name	Type	Description
base_dn	string	Specifies the default base DN for all searches.
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.

Name	Type	Description
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.

Name	Type	Description
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.

Name	Type	Description
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.

Name	Type	Description
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ldap_service

Name	Type	Description
ad_domain	string	This parameter specifies the name of the Active Directory domain used to discover LDAP servers for use by this client. This is mutually exclusive with `servers` during POST and PATCH.
base_dn	string	Specifies the default base DN for all searches.

Name	Type	Description
base_scope	string	Specifies the default search scope for LDAP queries: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
bind_as_cifs_server	boolean	Specifies whether or not CIFS server's credentials are used to bind to the LDAP server.
bind_dn	string	Specifies the user that binds to the LDAP servers.
bind_password	string	Specifies the bind password for the LDAP servers.
group_dn	string	Specifies the group Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for group lookups.
group_membership_filter	string	Specifies the custom filter used for group membership lookups from an LDAP server.
group_scope	string	Specifies the default search scope for LDAP for group lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
is_netgroup_byhost_enabled	boolean	Specifies whether or not netgroup by host querying is enabled.

Name	Type	Description
is_owner	boolean	Specifies whether or not the SVM owns the LDAP client configuration.
ldaps_enabled	boolean	Specifies whether or not LDAPS is enabled.
min_bind_level	string	The minimum bind authentication level. Possible values are: • anonymous - anonymous bind • simple - simple bind • sasl - Simple Authentication and Security Layer (SASL) bind
netgroup_byhost_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup by host lookups.
netgroup_byhost_scope	string	Specifies the default search scope for LDAP for netgroup by host lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
netgroup_dn	string	Specifies the netgroup Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for netgroup lookups.

Name	Type	Description
netgroup_scope	string	Specifies the default search scope for LDAP for netgroup lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN
port	integer	The port used to connect to the LDAP Servers.
preferred_ad_servers	array[string]	
query_timeout	integer	Specifies the maximum time to wait for a query response from the LDAP server, in seconds.
referral_enabled	boolean	Specifies whether or not LDAP referral is enabled.
restrict_discovery_to_site	boolean	Specifies whether or not LDAP server discovery is restricted to site-scope.
schema	string	The name of the schema template used by the SVM. • AD-IDMU - Active Directory Identity Management for UNIX • AD-SFU - Active Directory Services for UNIX • MS-AD-BIS - Active Directory Identity Management for UNIX • RFC-2307 - Schema based on RFC 2307 • Custom schema
servers	array[string]	

Name	Type	Description
session_security	string	Specifies the level of security to be used for LDAP communications: • none - no signing or sealing • sign - sign LDAP traffic • seal - seal and sign LDAP traffic
skip_config_validation	boolean	Indicates whether or not the validation for the specified LDAP configuration is disabled.
status	status	
svm	svm	SVM, applies only to SVM-scoped objects.
try_channel_binding	boolean	Specifies whether or not channel binding is attempted in the case of TLS/LDAPS.
use_start_tls	boolean	Specifies whether or not to use Start TLS over LDAP connections.
user_dn	string	Specifies the user Distinguished Name (DN) that is used as the starting point in the LDAP directory tree for user lookups.
user_scope	string	Specifies the default search scope for LDAP for user lookups: • base - search the named entry only • onelevel - search all entries immediately below the DN • subtree - search the named DN entry and the entire subtree below the DN

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage NIS configuration

Security authentication cluster NIS endpoint overview

Overview

NIS servers are used to authenticate user and client computers. NIS domain name and NIS server information is required to configure NIS. This API retrieves and manages NIS server configurations.

Examples

Retrieving cluster NIS information

The cluster NIS GET request retrieves the NIS configuration of the cluster.

The following example shows how a GET request is used to retrieve the cluster NIS configuration:

```
# The API:
/security/authentication/cluster/nis

# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/nis" -H
"accept: application/hal+json"

# The response:
{
"domain": "domainA.example.com",
"servers": [
  "10.10.10.10",
  "example.com"
],
"bound_servers": [
  "10.10.10.10"
]
}
```

Creating the cluster NIS configuration

The cluster NIS POST request creates a NIS configuration for the cluster.

The following example shows how a POST request is used to create a cluster NIS configuration:

```
# The API:
/security/authentication/cluster/nis

# The call:
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/nis"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"domain\": \"domainA.example.com\", \"servers\": [
\"10.10.10.10\",\"example.com\" ]}"
```

Updating the cluster NIS configuration

The cluster NIS PATCH request updates the NIS configuration of the cluster.

The following example shows how to update the domain:

```
# The API:
/security/authentication/cluster/nis

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/authentication/cluster/nis"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"domain\": \"domainC.example.com\", \"servers\": [ \"13.13.13.13\" ]}"
```

The following example shows how to update the server:

```
# The API:
/security/authentication/cluster/nis

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/authentication/cluster/nis"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"servers\": [ \"14.14.14.14\" ]}"
```

Deleting the cluster NIS configuration

The cluster NIS DELETE request deletes the NIS configuration of the cluster.

The following example shows how a DELETE request is used to delete the cluster NIS configuration:

```
# The API:
/security/authentication/cluster/nis

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/authentication/cluster/nis"
-H "accept: application/hal+json"
```

Delete the NIS configuration for the cluster

DELETE `/security/authentication/cluster/nis`

Introduced In: 9.6

Deletes the NIS configuration of the cluster. NIS can be removed as a source from ns-switch if NIS is not used for lookups.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the NIS configuration for the cluster

GET `/security/authentication/cluster/nis`

Introduced In: 9.6

Retrieves the NIS configuration of the cluster. Both NIS domain and servers are displayed by default. The `bound_servers` property indicates the successfully bound NIS servers.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "string",
  "servers": [
    "string"
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update the NIS configuration for the cluster

PATCH `/security/authentication/cluster/nis`

Introduced In: 9.6

Both NIS domain and servers can be updated. Domains and servers cannot be empty. Both FQDNs and IP addresses are supported for the 'servers' field. If the domain is updated, NIS servers must also be specified. IPv6 must be enabled if IPv6 family addresses are specified for the `servers` property.

Request Body

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

Example request

```
{
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "string",
  "servers": [
    "string"
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966253	IPv6 is not enabled in the cluster .
3276964	The NIS domain name or NIS server domain is too long. The maximum supported for domain name is 64 characters and the maximum supported for NIS server domain is 255 characters.
3276933	A maximum of 10 NIS servers can be configured per SVM.
23724109	DNS resolution failed for one or more specified servers.

Error Code	Description
23724112	DNS resolution failed due to an internal error. Contact technical support if this issue persists.
23724132	DNS resolution failed for all the specified servers.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

cluster_nis_service

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the NIS configuration for the cluster

POST `/security/authentication/cluster/nis`

Introduced In: 9.6

The cluster can have one NIS server configuration. Specify the NIS domain and NIS servers as input. The servers field cannot be empty.
Both FQDNs and IP addresses are supported for the `server` property. IPv6 must be enabled if IPv6 family addresses are specified in the `server` property. A maximum of ten NIS servers are supported.

Required properties

- `domain` - NIS domain to which this configuration belongs.
- `servers` - List of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

Request Body

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.

Name	Type	Description
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

Example request

```
{
  "binding_details": [
    {
      "server": "string",
      "status": {
        "code": "string",
        "message": "string"
      }
    }
  ],
  "bound_servers": [
    "string"
  ],
  "domain": "string",
  "servers": [
    "string"
  ]
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of NIS domain records.
records	array[cluster_nis_service]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "binding_details": [
        {
          "server": "string",
          "status": {
            "code": "string",
            "message": "string"
          }
        }
      ],
      "bound_servers": [
        "string"
      ],
      "domain": "string",
      "servers": [
        "string"
      ]
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1966253	IPv6 is not enabled in the cluster.

Error Code	Description
3276964	The NIS domain name or NIS server domain is too long. The maximum supported for domain name is 64 characters and the maximum supported for NIS server domain is 255 characters.
3276933	A maximum of 10 NIS servers can be configured per SVM.
13434916	The SVM is in the process of being created. Wait a few minutes, and then try the command again.
23724109	DNS resolution failed for one or more specified servers.
23724112	DNS resolution failed due to an internal error. Contact technical support if this issue persists.
23724132	DNS resolution failed for all the specified servers.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
23724111	Invalid value specified for nis-servers. The value must be a valid hostname or IP address.
23724087	The specified IPv6 address is not supported because it is one of the following: ::, link-local, multicast, v4-compatible, v4-mapped, loopback.
23724086	The specified IPv4 address is not supported because it is one of the following: multicast, loopback, 0.0.0.0 or broadcast.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

binding_status

Name	Type	Description
code	string	Code corresponding to the server's binding status.
message	string	Detailed description of the server's binding status.

binding_details

Name	Type	Description
server	string	Hostname/IP address of the NIS server in the domain.
status	binding_status	

cluster_nis_service

Name	Type	Description
binding_details	array[binding_details]	An array of objects where each object represents the NIS server and it's status for a given NIS domain. It is an advanced field.
bound_servers	array[string]	
domain	string	The NIS domain to which this configuration belongs.
servers	array[string]	A list of hostnames or IP addresses of NIS servers used by the NIS domain configuration.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update OAuth 2.0 status

Security authentication cluster oauth2 endpoint overview

Overview

This API is used to enable and disable OAuth 2.0 in the cluster. The PATCH request enables and disables OAuth 2.0 in the cluster.
+

Examples

Retrieving the OAuth 2.0 status in the cluster

The following output shows the OAuth 2.0 status of the cluster.
+

```
# The API:
/api/security/authentication/cluster/oauth2

# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/oauth2"
-H "accept: application/hal+json"

# The response:
{
"enabled": false
}
```

Enabling the OAuth 2.0 in the cluster

The following output shows how to enable the OAuth 2.0 in the cluster.
+

```
# The API:
/api/security/authentication/cluster/oauth2

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/security/authentication/cluster/oauth2" -H "accept:
application/hal+json" -d '{ "enabled": true }'
```

Retrieve the OAuth 2.0 status

GET `/security/authentication/cluster/oauth2`

Introduced In: 9.14

Retrieves the OAuth 2.0 status.

Related ONTAP commands

- `security oauth2 show`

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
enabled	boolean	Indicates whether OAuth 2.0 is enabled or disabled globally. Default value is false.

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the OAuth 2.0 status

PATCH `/security/authentication/cluster/oauth2`

Introduced In: 9.14

Updates the OAuth 2.0 status.

Related ONTAP commands

- `security oauth2 modify`

Request Body

Name	Type	Description
enabled	boolean	Indicates whether OAuth 2.0 is enabled or disabled globally. Default value is false.

Response

```
Status: 200, Ok
```

Error

```
Status: Default,
```

Definitions

See Definitions

security_oauth2_global

Name	Type	Description
enabled	boolean	Indicates whether OAuth 2.0 is enabled or disabled globally. Default value is false.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and create OAuth 2.0 configurations

Security authentication cluster oauth2 clients endpoint overview

Overview

This API is used to retrieve and configure relevant information pertaining to the OAuth 2.0 configuration in the cluster. The POST request creates the OAuth 2.0 configuration if there is none present. Various responses are shown in the examples below.
+

Examples

Retrieving the OAuth 2.0 configuration in the cluster

The following output shows the OAuth 2.0 configuration in the cluster.
+

```
# The API:
/api/security/authentication/cluster/oauth2/clients

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/authentication/cluster/oauth2/clients" -H "accept:
application/hal+json"

# The response:
{
 "records": [
{
  "name": "auth0"
}
 ],
 "num_records": 1
}
```

Creating the OAuth 2.0 configuration

The following output shows how to create the OAuth 2.0 configuration in the cluster.
+

```
= The API:

/api/security/authentication/cluster/oauth2/clients

= The call:

curl -X POST "https://+++<mgmt-
ip>+++/api/security/authentication/cluster/oauth2/clients?return_records=t
rue" -H "accept: application/hal+json" -d '{ "name": "name",
"application": "http", "issuer": "https://examplelab.customer.com",
"audience": "aud", "client_id": "client_id", "client_secret":
```

```
"client_secret", "introspection": {"endpoint_uri":
"https://examplelab.customer.com/server/endpoint", "interval": "PT1H" },
"remote_user_claim": "user_claim", "outgoing_proxy":
"https://johndoe:somesecret@proxy.example.com:8080",
"use_local_roles_if_present": false, "use_mutual_tls": "required"
}'+++</mgmt-ip>+++

= The response:

{
"job": {
  "uuid": "e45b123b-c228-11e8-aa20-0050568e36bb",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e45b123b-c228-11e8-aa20-0050568e36bb"
    }
  }
}
}

'''





[[ID1f3ffc96242399b065880f5953a2bb6a]]
= Retrieve all OAuth 2.0 configurations

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/cluster/oauth2/clients`#

*Introduced In:* 9.14

Retrieves all OAuth 2.0 configurations.

== Related ONTAP commands

* `security oauth2 client show`


== Parameters

[cols=5*,options=header]
|===

|Name
```

```
|Type
|In
|Required
|Description

|outgoing_proxy
|string
|query
|False
a|Filter by outgoing_proxy


|provider
|string
|query
|False
a|Filter by provider

* Introduced in: 9.16


|application
|string
|query
|False
a|Filter by application


|issuer
|string
|query
|False
a|Filter by issuer


|hashed_client_secret
|string
|query
|False
a|Filter by hashed_client_secret


|audience
|string
|query
|False
a|Filter by audience
```

```
|use_local_roles_if_present
|boolean
|query
|False
a|Filter by use_local_roles_if_present


|introspection.interval
|string
|query
|False
a|Filter by introspection.interval


|introspection.endpoint_uri
|string
|query
|False
a|Filter by introspection.endpoint_uri


|name
|string
|query
|False
a|Filter by name


|client_id
|string
|query
|False
a|Filter by client_id


|use_mutual_tls
|string
|query
|False
a|Filter by use_mutual_tls


|jwks.provider_uri
|string
|query
```

```
|False
a|Filter by jwks.provider_uri


|jwks.refresh_interval
|string
|query
|False
a|Filter by jwks.refresh_interval


|remote_user_claim
|string
|query
|False
a|Filter by remote_user_claim


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0
```

```
|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records.


|records
|array[link:#security_oauth2[security_oauth2]]
a|

|===


.Example response
[%collapsible%closed]
```

```
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": "string",
      "audience": "string",
      "client_id": "string",
      "hashed_client_secret": "string",
      "introspection": {
        "endpoint_uri":
"https://examplelab.customer.com/token/introspect",
        "interval": "PT1H"
      },
      "issuer": "https://examplelab.customer.com",
      "jwks": {
        "provider_uri": "https://examplelab.customer.com/pf/JWKS",
        "refresh_interval": "PT2H"
      },
      "name": "auth0",
      "outgoing_proxy":
"https://johndoe:secretpass@proxy.example.com:8080",
      "provider": "entra",
      "remote_user_claim": "string",
      "skip_uri_validation": true,
      "use_mutual_tls": "string"
    }
  ]
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|
```

```
|===


[#introspection]
[.api-collapsible-fifth-title]
introspection

[cols=3*,options=header]
|===
|Name
|Type
|Description

|endpoint_uri
|string
a|The token introspection endpoint URI.


|interval
|string
a|The refresh interval for caching tokens, in ISO-8601 format. This can be
set to the value "disabled" to disable caching of tokens. When set to 0,
tokens are cached according to the expiry period in them. Otherwise, it
can be set to a value from 1 second to 2147483647 seconds.


|===


[#jwks]
[.api-collapsible-fifth-title]
jwks

[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_uri
|string
a|The URI on which the JSON Web Key Set (JWKS) are hosted.


|refresh_interval
|string
a|The refresh interval for the JSON Web Key Set (JWKS), in ISO-8601
```

```
format. This can be set to a value from 300 seconds to 2147483647 seconds.


|===


[#security_oauth2]
[.api-collapsible-fifth-title]
security_oauth2

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application
|string
a|The name of the application using OAuth 2.0. Required for POST
operations.


|audience
|string
a|The OAuth 2.0 Audience.


|client_id
|string
a|The OAuth 2.0 client ID. Required in POST operations for remote
introspection.


|hashed_client_secret
|string
a|The OAuth 2.0 client secret as a SHA256 HMAC hashed value created with
the cluster UUID as its HMAC secret key.


|introspection
|link:#introspection[introspection]
a|
```

```
|issuer
|string
a|The OAuth 2.0 Issuer.


|jwks
|link:#jwks[jwks]
a|

|name
|string
a|The configuration name. Required for POST operations.


|outgoing_proxy
|string
a|Outgoing proxy to access external identity providers (IdPs). If not
specified, no proxy is configured.


|provider
|string
a|The Identity Provider type.


|remote_user_claim
|string
a|The remote user claim.


|use_local_roles_if_present
|boolean
a|Indicates whether or not to use locally configured roles, if present.
Default value is false.


|use_mutual_tls
|string
a|OAuth 2.0 mutual TLS authentication setting. Set this value to "none" to
disable mutual TLS authentication. Set this value to "required" to enforce
mutual TLS authentication for all access tokens and reject any token that
does not have x5t#S256 property in the cnf section. The default value is
"request" which means mutual TLS authentication is enforced only if the
x5t#S256 property is present in the cnf section of the access token.


|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
```

```
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID26fcdf60f794a3b6746086ad53ceed7d]]
= Create the OAuth 2.0 configuration

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/cluster/oauth2/clients`#

*Introduced In:* 9.14

Creates the OAuth 2.0 configuration.

== Required properties

* `name`
* `application`
* `issuer`

== Optional properties

* `audience`
* `client_id`
* `client_secret`
* `introspection.endpoint_uri`
* `introspection.interval`
* `remote_user_claim`
* `jwks.provider_uri`
* `jwks.refresh_interval`
* `outgoing_proxy`
* `use_local_roles_if_present`
* `skip_uri_validation`
* `use_mutual_tls`
* `provider`
```

```
== Related ONTAP commands

* `security oauth2 client create`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|application
|string
a|The name of the application using OAuth 2.0. Required for POST
operations.


|audience
|string
a|The OAuth 2.0 Audience.


|client_id
|string
a|The OAuth 2.0 client ID. Required in POST operations for remote
introspection.


|client_secret
|string
a|The OAuth 2.0 client secret. Required in POST operations for remote
introspection.


|hashed_client_secret
|string
a|The OAuth 2.0 client secret as a SHA256 HMAC hashed value created with
the cluster UUID as its HMAC secret key.


|introspection
|link:#introspection[introspection]
a|

|issuer
|string
a|The OAuth 2.0 Issuer.


|jwks
|link:#jwks[jwks]
```

```
a|

|name
|string
a|The configuration name. Required for POST operations.


|outgoing_proxy
|string
a|Outgoing proxy to access external identity providers (IdPs). If not
specified, no proxy is configured.


|provider
|string
a|The Identity Provider type.


|remote_user_claim
|string
a|The remote user claim.


|skip_uri_validation
|boolean
a|Indicates whether or not to validate the input URIs. Default value is
false.


|use_local_roles_if_present
|boolean
a|Indicates whether or not to use locally configured roles, if present.
Default value is false.


|use_mutual_tls
|string
a|OAuth 2.0 mutual TLS authentication setting. Set this value to "none" to
disable mutual TLS authentication. Set this value to "required" to enforce
mutual TLS authentication for all access tokens and reject any token that
does not have x5t#S256 property in the cnf section. The default value is
"request" which means mutual TLS authentication is enforced only if the
x5t#S256 property is present in the cnf section of the access token.


|===
```

```
.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "application": "string",
  "audience": "string",
  "client_id": "string",
  "client_secret": "string",
  "hashed_client_secret": "string",
  "introspection": {
    "endpoint_uri": "https://examplelab.customer.com/token/introspect",
    "interval": "PT1H"
  },
  "issuer": "https://examplelab.customer.com",
  "jwks": {
    "provider_uri": "https://examplelab.customer.com/pf/JWKS",
    "refresh_interval": "PT2H"
  },
  "name": "auth0",
  "outgoing_proxy": "https://johndoe:secretpass@proxy.example.com:8080",
  "provider": "entra",
  "remote_user_claim": "string",
  "use_mutual_tls": "string"
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 203817010
| Client ID is required for remote introspection.

| 203817011
| Client secret is required for remote introspection.

| 203817012
| Client ID and client secret required for remote introspection.

| 203817013
| JWKS URI should not be configured for remote introspection.

| 203817014
| JWKS refresh interval should not be specified for remote introspection.

| 203817015
| The token introspection endpoint is required for remote introspection.

| 203817016
| JWKS refresh interval provided without providing JWKS URI.

| 203817017
| Minimum supported value of JWKS refresh interval is 300 seconds.

| 203817018
| Required parameters for either local validation or remote introspection
are missing. Provide either the JWKS URI for local validation, or metadata
configuration URI or token introspection endpoint with client ID and
secret for remote introspection.

| 203817019
| Failed to add new IDP client because number of maximum supported IDP
clients is already reached.

| 203817020
| Internal error. Failed to validate provider URI.
```

```
| 203817021
| OAuth 2.0 Provider URI validation failed with error.

| 203817022
| OAuth 2.0 Provider JWKS URI validation failed. Received empty response
message from the JWKS URI.

| 203817023
| OAuth 2.0 Provider JWKS URI validation failed. No keys were found in
response message received from the JWKS URI.

| 203817024
| Internal error. Unable to allocate memory for CURL response.

| 203817025
| Maximum value of JWKS refresh interval is 2147483647 seconds.

| 203817033
| OAuth 2.0 Provider Introspection endpoint validation failed. Received
empty response message from the Introspection endpoint.

| 203817034
| OAuth 2.0 Provider Introspection endpoint validation failed. Received
invalid response message for Introspection request.

| 203817037
| An entry cannot be created as another entry with the same configuration
name has the same issuer and audience.

| 203817042
| Maximum value of introspection interval is 2147483647 seconds.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
```

```
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#introspection]
[.api-collapsible-fifth-title]
introspection

[cols=3*,options=header]
|===
|Name
|Type
|Description

|endpoint_uri
|string
a|The token introspection endpoint URI.


|interval
|string
a|The refresh interval for caching tokens, in ISO-8601 format. This can be
set to the value "disabled" to disable caching of tokens. When set to 0,
tokens are cached according to the expiry period in them. Otherwise, it
can be set to a value from 1 second to 2147483647 seconds.


|===


[#jwks]
[.api-collapsible-fifth-title]
```

```
jwks

[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_uri
|string
a|The URI on which the JSON Web Key Set (JWKS) are hosted.


|refresh_interval
|string
a|The refresh interval for the JSON Web Key Set (JWKS), in ISO-8601
format. This can be set to a value from 300 seconds to 2147483647 seconds.


|===


[#security_oauth2]
[.api-collapsible-fifth-title]
security_oauth2

[cols=3*,options=header]
|===
|Name
|Type
|Description

|application
|string
a|The name of the application using OAuth 2.0. Required for POST
operations.


|audience
|string
a|The OAuth 2.0 Audience.


|client_id
|string
a|The OAuth 2.0 client ID. Required in POST operations for remote
introspection.
```

```
|client_secret
|string
a|The OAuth 2.0 client secret. Required in POST operations for remote
introspection.


|hashed_client_secret
|string
a|The OAuth 2.0 client secret as a SHA256 HMAC hashed value created with
the cluster UUID as its HMAC secret key.


|introspection
|link:#introspection[introspection]
a|

|issuer
|string
a|The OAuth 2.0 Issuer.


|jwks
|link:#jwks[jwks]
a|

|name
|string
a|The configuration name. Required for POST operations.


|outgoing_proxy
|string
a|Outgoing proxy to access external identity providers (IdPs). If not
specified, no proxy is configured.


|provider
|string
a|The Identity Provider type.


|remote_user_claim
|string
a|The remote user claim.
```

```
|skip_uri_validation
|boolean
a|Indicates whether or not to validate the input URIs. Default value is
false.


|use_local_roles_if_present
|boolean
a|Indicates whether or not to use locally configured roles, if present.
Default value is false.


|use_mutual_tls
|string
a|OAuth 2.0 mutual TLS authentication setting. Set this value to "none" to
disable mutual TLS authentication. Set this value to "required" to enforce
mutual TLS authentication for all access tokens and reject any token that
does not have x5t#S256 property in the cnf section. The default value is
"request" which means mutual TLS authentication is enforced only if the
x5t#S256 property is present in the cnf section of the access token.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
```

```
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
```

```
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= View and delete an OAuth 2.0 configuration

:leveloffset: +1


[[ID3cb522214eb1cc3e77922d8694944eb9]]
= Security authentication cluster oauth2 clients name endpoint overview



== Overview

This API is used to retrieve and delete the OAuth 2.0 configuration in the
cluster. The GET request retrieves the OAuth 2.0 configuration. The DELETE
request removes the OAuth 2.0 configuration.  Various responses are shown
in the examples below.
 +

'''

== Examples

=== Retrieving the OAuth 2.0 configuration in the cluster

The following output shows the OAuth 2.0 configuration in the cluster.
 +

'''

----

# The API:
```

```
/api/security/authentication/cluster/oauth2/clients/{name}

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/authentication/cluster/oauth2/clients/auth0" -H "accept:
application/hal+json"

# The response:
{
"name": "auth0",
"application": "http",
"issuer": "https://examplelab.customer.com",
"audience": "aud",
"client_id": "client_id",
"hashed_client_secret":
"a019c4d5f3815b50f5e9267d3ee80e8d8008308b83705c57206a1f5984dd0b26",
"introspection": {
  "endpoint_uri": "https://examplelab.customer.com/server/endpoint",
  "interval": "PT1H"
},
"remote_user_claim": "user_claim",
"jwks": {
  "provider_uri": "https://examplelab.customer.com/pf/JWKS",
  "refresh_interval": "PT1H"
},
"use_local_roles_if_present": false,
"outgoing_proxy": "https://johndoe:secretpass@proxy.example.com:8080",
"_links": {
  "self": {
    "href": "/api/security/authentication/cluster/oauth2/clients"
  }
},
"use_mutual_tls": "required"
}
----

'''

=== Deleting the OAuth 2.0 configuration

'''

----

# The API:
/api/security/authentication/cluster/oauth2/clients/{name}
```

```
# The call:
curl -X DELETE "https://<mgmt-
ip>/api/security/authentication/cluster/oauth2/clients/auth0"
----

'''




[[IDead16e2e08b6977f0cab3a537006f8da]]
= Delete an OAuth 2.0 configuration

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/cluster/oauth2/clients/{name}`#

*Introduced In:* 9.14

Deletes the OAuth 2.0 configuration with the specified name.

== Required properties

***** `config_name`

== Related ONTAP commands

* `security oauth2 client delete`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|name
|string
|path
|True
a|OAuth 2.0 configuration name.
```

```
|===

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 203816995
| OAuth 2.0 must be disabled before the configuration can be removed.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
```

```
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID14f2e52df3784a216f7beeb60fb7ec88]]
= Retrieve an OAuth 2.0 configuration with the specified name

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/cluster/oauth2/clients/{name}`#

*Introduced In:* 9.14

Retrieves the OAuth 2.0 configuration with the specified name.

== Related ONTAP commands

* `security oauth2 client show`
```

```
== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|name
|string
|path
|True
a|OAuth 2.0 configuration name.


|outgoing_proxy
|string
|query
|False
a|Filter by outgoing_proxy


|provider
|string
|query
|False
a|Filter by provider

* Introduced in: 9.16


|application
|string
|query
|False
a|Filter by application


|issuer
|string
|query
|False
a|Filter by issuer
```

```
|hashed_client_secret
|string
|query
|False
a|Filter by hashed_client_secret


|audience
|string
|query
|False
a|Filter by audience


|use_local_roles_if_present
|boolean
|query
|False
a|Filter by use_local_roles_if_present


|introspection.interval
|string
|query
|False
a|Filter by introspection.interval


|introspection.endpoint_uri
|string
|query
|False
a|Filter by introspection.endpoint_uri


|client_id
|string
|query
|False
a|Filter by client_id


|use_mutual_tls
|string
|query
```

```
|False
a|Filter by use_mutual_tls


|jwks.provider_uri
|string
|query
|False
a|Filter by jwks.provider_uri


|jwks.refresh_interval
|string
|query
|False
a|Filter by jwks.refresh_interval


|remote_user_claim
|string
|query
|False
a|Filter by remote_user_claim


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|application
|string
a|The name of the application using OAuth 2.0. Required for POST
operations.


|audience
|string
a|The OAuth 2.0 Audience.


|client_id
|string
a|The OAuth 2.0 client ID. Required in POST operations for remote
introspection.


|hashed_client_secret
|string
a|The OAuth 2.0 client secret as a SHA256 HMAC hashed value created with
the cluster UUID as its HMAC secret key.


|introspection
|link:#introspection[introspection]
a|

|issuer
|string
a|The OAuth 2.0 Issuer.


|jwks
|link:#jwks[jwks]
a|

|name
|string
a|The configuration name. Required for POST operations.


|outgoing_proxy
|string
a|Outgoing proxy to access external identity providers (IdPs). If not
specified, no proxy is configured.
```

```
|provider
|string
a|The Identity Provider type.


|remote_user_claim
|string
a|The remote user claim.


|use_local_roles_if_present
|boolean
a|Indicates whether or not to use locally configured roles, if present.
Default value is false.


|use_mutual_tls
|string
a|OAuth 2.0 mutual TLS authentication setting. Set this value to "none" to
disable mutual TLS authentication. Set this value to "required" to enforce
mutual TLS authentication for all access tokens and reject any token that
does not have x5t#S256 property in the cnf section. The default value is
"request" which means mutual TLS authentication is enforced only if the
x5t#S256 property is present in the cnf section of the access token.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application": "string",
  "audience": "string",
  "client_id": "string",
  "hashed_client_secret": "string",
  "introspection": {
    "endpoint_uri": "https://examplelab.customer.com/token/introspect",
    "interval": "PT1H"
```

```
  },
  "issuer": "https://examplelab.customer.com",
  "jwks": {
    "provider_uri": "https://examplelab.customer.com/pf/JWKS",
    "refresh_interval": "PT2H"
  },
  "name": "auth0",
  "outgoing_proxy": "https://johndoe:secretpass@proxy.example.com:8080",
  "provider": "entra",
  "remote_user_claim": "string",
  "skip_uri_validation": true,
  "use_mutual_tls": "string"
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
```

```
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===
```

```
[#introspection]
[.api-collapsible-fifth-title]
introspection

[cols=3*,options=header]
|===
|Name
|Type
|Description

|endpoint_uri
|string
a|The token introspection endpoint URI.


|interval
|string
a|The refresh interval for caching tokens, in ISO-8601 format. This can be
set to the value "disabled" to disable caching of tokens. When set to 0,
tokens are cached according to the expiry period in them. Otherwise, it
can be set to a value from 1 second to 2147483647 seconds.


|===


[#jwks]
[.api-collapsible-fifth-title]
jwks

[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_uri
|string
a|The URI on which the JSON Web Key Set (JWKS) are hosted.


|refresh_interval
|string
a|The refresh interval for the JSON Web Key Set (JWKS), in ISO-8601
format. This can be set to a value from 300 seconds to 2147483647 seconds.
```

```
|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
```

```
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage SAML service

:leveloffset: +1


[[ID91e2f5f6a53ad1e765d328f320590cfa]]
= Security authentication cluster saml-sp endpoint overview



== Overview

This API is used to retrieve and display relevant information pertaining
to the SAML service provider configuration in the cluster. The POST
request creates a SAML service provider configuration if there is none
present.  The DELETE request removes the SAML service provider
configuration.  The PATCH request enables and disables SAML in the
cluster.  Various responses are shown in the examples below.
 +

'''

== Examples

=== Retrieving the SAML service provider configuration in the cluster

The following output shows the SAML service provider configuration in the
```

```
cluster.
 +

'''

----

# The API:
/api/security/authentication/cluster/saml-sp

# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/saml-
sp" -H "accept: application/hal+json"

# The response:
{
"idp_uri": "https://examplelab.customer.com/idp/Metadata",
"enabled": true,
"host": "172.21.74.181",
"certificate": {
  "ca": "cluster1",
  "serial_number": "156F10C3EB4C51C1"
},
"_links": {
  "self": {
    "href": "/api/security/authentication/cluster/saml-sp"
  }
}
}
----

'''

=== Creating the SAML service provider configuration

The following output shows how to create a SAML service provider
configuration in the cluster.
 +

'''

----

# The API:
/api/security/authentication/cluster/saml-sp

# The call:
```

```
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/saml-
sp?return_records=true" -H "accept: application/hal+json" -d '{ "idp_uri":
"https://examplelab.customer.com/idp/Metadata", "host": "172.21.74.181",
"certificate": { "ca": "cluster1", "serial_number": "156F10C3EB4C51C1" }}'
----

'''

=== Updating the SAML service provider configuration

The following output shows how to enable a SAML service provider
configuration in the cluster.

Disabling the configuration requires the client to be authenticated
through SAML prior to performing the operation.
 +

'''

----

# The API:
/api/security/authentication/cluster/saml-sp

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/authentication/cluster/saml-
sp/" -d '{ "enabled": true }'
----

'''

=== Deleting the SAML service provider configuration

'''

----

# The API:
/api/security/authentication/cluster/saml-sp

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/security/authentication/cluster/saml-sp/"
----

'''
```

```
[[ID4c683ba23200df08208306fa4d484fa0]]
= Delete an SAML service provider configuration

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp`#

*Introduced In:* 9.6

Deletes a SAML service provider configuration.


== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 12320803
| SAML must be disabled before the configuration can be removed.

| 12320832
| Internal Error. Failed to execute the command, web server setup is in
progress. Retry after some time.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
```

```
====



[[IDd589d1f348c890d6614ce60d5a829d82]]
= Retrieve an SAML service provider configuration

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp`#

*Introduced In:* 9.6

Retrieves a SAML service provider configuration.


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|idp_uri
|string
|query
|False
a|Filter by idp_uri

* Introduced in: 9.7


|host
|string
|query
|False
a|Filter by host

* Introduced in: 9.7


|certificate.serial_number
|string
|query
```

```
|False
a|Filter by certificate.serial_number

* Introduced in: 9.7
* maxLength: 40
* minLength: 1


|certificate.common_name
|string
|query
|False
a|Filter by certificate.common_name

* Introduced in: 9.7


|certificate.ca
|string
|query
|False
a|Filter by certificate.ca

* Introduced in: 9.7
* maxLength: 256
* minLength: 1


|enabled
|boolean
|query
|False
a|Filter by enabled

* Introduced in: 9.7


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|certificate
|link:#certificate[certificate]
a|

|enabled
|boolean
a|The SAML service provider is enabled.  Valid for PATCH and GET
operations only.


|host
|string
a|The SAML service provider host.


|idp_uri
|string
a|The identity provider (IdP) metadata location. Required for POST
operations.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
```

```
  "certificate": {
    "ca": "string",
    "common_name": "cluster1",
    "serial_number": "1506B24A94F566BA"
  },
  "host": "string",
  "idp_uri": "https://idp.example.com/FederationMetadata/2007-
06/FederationMetadata.xml"
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

```
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#certificate]
[.api-collapsible-fifth-title]
certificate
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|ca
|string
a|Server certificate issuing certificate authority (CA).  This cannot be
used with the server certificate common name.


|common_name
|string
a|Server certificate common name.  This cannot be used with the
certificate authority (CA) or serial_number.


|serial_number
|string
a|Server certificate serial number.  This cannot be used with the server
certificate common name.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument
```

```
|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDb3eb3256338ac5c96b12023ad6f2b8cb]]
= Update an SAML service provider configuration

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp`#
```

```
*Introduced In:* 9.6

Updates a SAML service provider configuration.


== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|enabled
|boolean
a|The SAML service provider is enabled.  Valid for PATCH and GET
operations only.


|===


== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 12320791
| SAML can only be disabled using the console or a SAML-authenticated
application.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.
```

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#certificate]
[.api-collapsible-fifth-title]
certificate
[#security_saml_sp]
[.api-collapsible-fifth-title]
security_saml_sp

[cols=3*,options=header]
|===
|Name
|Type
|Description

|enabled
|boolean
a|The SAML service provider is enabled.  Valid for PATCH and GET
operations only.
```

```
|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code
```

```
|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID64a333a288d81707777e0f1ff8a5686d]]
= Create an SAML service provider configuration

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp`#

*Introduced In:* 9.6

Creates a SAML service provider configuration. Note that "common_name" is
mutually exclusive with "serial_number" and "ca" in POST. SAML will
initially be disabled, requiring a patch to set "enabled" to "true", so
that the user has time to complete the setup of the IdP.

== Required properties

* `idp_uri`

== Optional properties

* `certificate`
* `enabled`
* `host`


== Parameters

[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description

|verify_metadata_server
|boolean
|query
|False
a|Verify IdP metadata server identity.

* Default value: 1



|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Request Body




[cols=3*,options=header]
|===
|Name
|Type
|Description

|certificate
|link:#certificate[certificate]
a|
```

```
|host
|string
a|The SAML service provider host.


|idp_uri
|string
a|The identity provider (IdP) metadata location. Required for POST
operations.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "certificate": {
    "ca": "string",
    "common_name": "cluster1",
    "serial_number": "1506B24A94F566BA"
  },
  "enabled": true,
  "host": "string",
  "idp_uri": "https://idp.example.com/FederationMetadata/2007-
06/FederationMetadata.xml"
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 12320789
| Failed to download data file from specified URI.

| 12320794
| The host parameter provided must be the cluster management interface's
IP address.  If the cluster management interface is not available, the
node management interface's IP address must be used.

| 12320795
| A valid cluster or node management interface IP address must be
provided.

| 12320805
| The certificate information provided does not match any installed
certificates.

| 12320806
| The certificate information entered does not match any installed
certificates.

| 12320814
| An invalid IDP URI has been entered.

| 12320815
| An IDP URI must be an HTTPS or FTPS URI.

| 12320819
| Use the HTTPS scheme for the `idp_uri` or set `verify_metadata_server`
to false.

| 12320820
| No certificate is installed with the specified `certificate.ca` and
`certificate.serial`.

| 12320821
| No certificate is installed with the specified
```

```
`certificate.common_name`.

| 12320823
| The host parameter provided must be the cluster management interface's
IP address. If the cluster management interface is not available, the node
management interface's IP address must be used.

| 12320827
| The certificate authority specified in the default metadata
configuration does not match the provided certificate authority.

| 12320828
| The SAML service provider host specified in the default metadata
configuration does not match the provided SAML service provider host.

| 12320829
| The certificate serial number specified in the default metadata
configuration does not match the provided certificate serial number.

| 12320830
| The certificate common name specified in the default metadata
configuration does not match the provided certificate common name.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
```

```
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#certificate]
[.api-collapsible-fifth-title]
certificate

[cols=3*,options=header]
|===
|Name
|Type
|Description

|ca
|string
a|Server certificate issuing certificate authority (CA).  This cannot be
used with the server certificate common name.


|common_name
|string
a|Server certificate common name.  This cannot be used with the
certificate authority (CA) or serial_number.


|serial_number
|string
a|Server certificate serial number.  This cannot be used with the server
certificate common name.


|===


[#security_saml_sp]
[.api-collapsible-fifth-title]
security_saml_sp

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|certificate
|link:#certificate[certificate]
a|

|host
|string
a|The SAML service provider host.


|idp_uri
|string
a|The identity provider (IdP) metadata location. Required for POST
operations.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===
```

```
//end collapsible .Definitions block
====



:leveloffset: -1


= Manage SAML default metadata configuration

:leveloffset: +1


[[ID553cf80b3bd78d12a35336b78f838eef]]
= Security authentication cluster saml-sp default-metadata endpoint
overview



== Overview

This API is used to manage relevant information about the SAML default
metadata configuration in the cluster. The POST request creates a SAML
default metadata configuration if there is none present.  The DELETE
request removes the SAML default metadata configuration.  Various
responses are shown in the examples below.
 +

'''

== Examples

=== Retrieving the SAML default metadata configuration in the cluster

The following output shows the SAML default metadata configuration in the
cluster.
 +

'''

----

# The API:
/api/security/authentication/cluster/saml-sp/default-metadata
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/security/authentication/cluster/saml-
sp/default-metadata" -H "accept: application/hal+json"

# The response:
{
"host": "172.21.74.181",
"certificate": {
  "ca": "cluster-1",
  "serial_number": "180E3331A0DC5A19",
  "common_name": "cluster-1"
},
"scope": "cluster",
"_links": {
  "self": {
    "href": "/api/security/authentication/cluster/saml-sp/default-
metadata"
  }
}
}
----

'''

=== Creating the SAML default metadata configuration in the cluster

The following output shows how to create the SAML default metadata in the
cluster.
 +

'''

----

# The API:
/api/security/authentication/cluster/saml-sp/default-metadata

# The call:
curl -X POST "https://<mgmt-ip>/api/security/authentication/cluster/saml-
sp/default-metadata?return_records=true" -H "accept: application/hal+json"
-d '{ "host": "172.21.74.181", "certificate": { "ca": "cluster1",
"serial_number": "156F10C3EB4C51C1" }}'
----

'''

=== Deleting the SAML default metadata configuration in the cluster
```

```
'''

----

# The API:
/api/security/authentication/cluster/saml-sp/default-metadata

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/security/authentication/cluster/saml-sp/default-metadata/"
----

'''





[[ID26ac5056b4a252267cdcafd74402ff88]]
= Delete the SAML default metadata configuration

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp/default-metadata`#

*Introduced In:* 9.17

Deletes the SAML default metadata configuration.


== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 12320817
| Internal Error. The SAML service provider metadata configuration is
```

```
being created, but is taking longer than expected to complete.

| 12320826
| SAML configuration already exists. Cannot delete the metadata when SAML
configuration is already present.

| 12320832
| Internal Error. Failed to execute the command, web server setup is in
progress. Retry after some time.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

```
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID727dcb62faa51d3dff2003a2b2092e88]]
= Retrieve the SAML default metadata configuration

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp/default-metadata`#

*Introduced In:* 9.17

Retrieves the SAML default metadata configuration.


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|certificate.ca
|string
```

```
|query
|False
a|Filter by certificate.ca

* maxLength: 256
* minLength: 1


|certificate.common_name
|string
|query
|False
a|Filter by certificate.common_name


|certificate.serial_number
|string
|query
|False
a|Filter by certificate.serial_number

* maxLength: 40
* minLength: 1


|scope
|string
|query
|False
a|Filter by scope


|host
|string
|query
|False
a|Filter by host


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===
```

```
== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|certificate
|link:#certificate[certificate]
a|

|host
|string
a|The SAML service provider host.


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "ca": "string",
    "common_name": "cluster1",
    "serial_number": "1506B24A94F566BA"
```

```
  },
  "host": "string",
  "scope": "string"
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
```

```
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#certificate]
[.api-collapsible-fifth-title]
certificate

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|ca
|string
a|Server certificate issuing certificate authority (CA).  This cannot be
used with the server certificate common name.


|common_name
|string
a|Server certificate common name.  This cannot be used with the
certificate authority (CA) or serial_number.


|serial_number
|string
a|Server certificate serial number.  This cannot be used with the server
certificate common name.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID99bdd7eb40118578c79a2b35f06ea56b]]
= Create the SAML default metadata configuration


[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/cluster/saml-sp/default-metadata`#

*Introduced In:* 9.17

Creates the SAML default metadata configuration. Note that `common_name`
is mutually exclusive with `serial_number` and `ca` in POST requests.
```

```
== Optional properties

* `certificate`
* `host`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|certificate
|link:#certificate[certificate]
```

```
a|

|host
|string
a|The SAML service provider host.


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "certificate": {
    "ca": "string",
    "common_name": "cluster1",
    "serial_number": "1506B24A94F566BA"
  },
  "host": "string",
  "scope": "string"
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 12320794
| Invalid host parameter for default metadata generation. The host
parameter must be the cluster management interface's IP address. If the
cluster management interface is not available, the node management
interface's IP address must be used.

| 12320805
| The certificate information provided does not match any installed
certificates.

| 12320806
| The certificate information entered does not match any installed
certificates.

| 12320820
| No certificate is installed with the specified `certificate.ca` and
`certificate.serial`.

| 12320821
| No certificate is installed with the specified
`certificate.common_name`.

| 12320825
| SAML configuration already exists. Cannot create the metadata when SAML
configuration is already present.

| 12320831
| Default metadata configuration already exists.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions
```

```
[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#certificate]
[.api-collapsible-fifth-title]
certificate

[cols=3*,options=header]
|===
|Name
|Type
|Description

|ca
|string
a|Server certificate issuing certificate authority (CA).  This cannot be
used with the server certificate common name.


|common_name
|string
a|Server certificate common name.  This cannot be used with the
certificate authority (CA) or serial_number.
```

```
|serial_number
|string
a|Server certificate serial number.  This cannot be used with the server
certificate common name.


|===


[#security_saml_def_metadata]
[.api-collapsible-fifth-title]
security_saml_def_metadata

[cols=3*,options=header]
|===
|Name
|Type
|Description

|certificate
|link:#certificate[certificate]
a|

|host
|string
a|The SAML service provider host.


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= View and create Duo groups

:leveloffset: +1


[[ID397bd62bd16504bbb3c3b3eeedfe2b1a]]
= Security authentication duo groups endpoint overview



== Overview

This API configures the group to be included in Duo authentication.

== Examples

=== Creating a Duo group

Specify the group name and other necessary information in the body of the
POST request. The owner.uuid or owner.name are not required for a cluster-
```

```
scoped account.

----

# The API:
POST "/api/security/authentication/duo/groups"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/groups --request
POST --data '{"name": "test",  "comment": "test post"}'

# The response:
{
}
----

=== Creating a Duo group for SVM-scoped account

For an SVM-scoped account, specify either the SVM name as the owner.name
or the SVM UUID as the owner.uuid along with other parameters for the
group. These parameters indicate the SVM that contains the user group and
can be obtained from the response body of the GET request performed on the
API "/api/svm/svms".

----

# The API:
POST "/api/security/authentication/duo/groups"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/groups --request
POST --data '{"name": "test",  "comment": "test post", "owner.name":"vs0"
}'

# The response:
{
}
----

=== Retrieving the configured Duo groups

Retrieves the Duo groups associated with the owners or filtered list (for
a specific SVM and so on).

----

# The API:
```

```
GET "/api/security/authentication/duo/groups"

# The call to retrieve Duo groups with the cluster or SVM:
curl -k https://<mgmt-ip>/api/security/authentication/duo/groups

# the response:
{
"records": [
{
  "owner": {
  "uuid": "5f618c80-d90a-11ed-a6e6-0050568e8ef2",
  "name": "vs0"
}
},
{
"owner": {
"uuid": "f810005a-d908-11ed-a6e6-0050568e8ef2",
"name": "cluster-1"
}
}
],
"num_records": 2
}
----




[[IDb27db60830e042fb95356e380c2a5dea]]
= Retrieve the configured groups

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/duo/groups`#

*Introduced In:* 9.14

Retrieves the configured groups.

== Related ONTAP commands

* `security login duo group show`

== Learn more

*
xref:{relative_path}security_authentication_duo_groups_endpoint_overview.h
```

```
tml[DOC /security/authentication/duo/groups]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|comment
|string
|query
|False
a|Filter by comment


|excluded_users
|string
|query
|False
a|Filter by excluded_users


|name
|string
|query
|False
a|Filter by name


|owner.name
|string
|query
|False
a|Filter by owner.name


|owner.uuid
|string
|query
```

```
|False
a|Filter by owner.uuid


|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
```

```
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records.


|records
|array[link:#duogroup[duogroup]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
```

```
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "excluded_users": [
        "user1",
        "user2"
      ],
      "name": "AD_Group",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
====

== Error
```


Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
```

```
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo group profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
```

```
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#duogroup]
[.api-collapsible-fifth-title]
duogroup

Group profile to include in Duo authentication.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|comment
|string
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|name
|string
a|Name of the group to be included in Duo authentication.
```

```
|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo group profile is configured.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDfb510088ab2278c9a17b87d45765ee3e]]
= Create a Duo group

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/duo/groups`#

*Introduced In:* 9.14

Creates a Duo group.

== Required properties

* `name` - Group name

== Related ONTAP commands

* `security login duo group create`

== Learn more

*
xref:{relative_path}security_authentication_duo_groups_endpoint_overview.h
tml[DOC /security/authentication/duo/groups]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
```

```
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|comment
|string
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|name
|string
a|Name of the group to be included in Duo authentication.
```

```
|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo group profile is configured.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "comment": "string",
  "excluded_users": [
    "user1",
    "user2"
  ],
  "name": "AD_Group",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
====
```

```
== Response
```

Status: 201, Created

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|num_records
|integer
a|Number of records.


|records
|array[link:#duogroup[duogroup]]
a|
```

```
|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "num_records": 1,
  "records": [
    {
      "comment": "string",
      "excluded_users": [
        "user1",
        "user2"
      ],
      "name": "AD_Group",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Error
```

Status: Default, Error

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo group profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.
```

```
|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#duogroup]
[.api-collapsible-fifth-title]
duogroup

Group profile to include in Duo authentication.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|comment
|string
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|name
|string
a|Name of the group to be included in Duo authentication.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo group profile is configured.


|===


[#error_arguments]
```

```
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage Duo groups configured for an SVM or cluster

:leveloffset: +1


[[IDb79b40de9b7cf30e05c8b2efd78ec563]]
= Security authentication duo groups owner.uuid name endpoint overview



== Overview

This API configures the Duo group for an SVM.
Specify the owner UUID. The owner UUID corresponds to the UUID of the SVM
containing the Duo groups and can be obtained from the response body of
the GET request performed on the API "`/api/svm/svms".

== Examples

=== Retrieving the specific configured Duo group(s) of the cluster or SVM

----

# The API:
GET "/api/security/authentication/duo/groups/{owner.uuid}/{group-name}"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/groups/f810005a-
d908-11ed-a6e6-0050568e8ef2/test

# the response:
```

```
{
"owner": {
"uuid": "f810005a-d908-11ed-a6e6-0050568e8ef2",
"name": "cluster-1"
},
"name": "test",
"excluded_users": [
   "tsmith",
   "msmith"
],
"comment": "test group create"
}
----

=== Modifying a Duo group

----

# The API:
PATCH "/api/security/authentication/duo/groups/{owner.uuid}/{group-name}"

# The call:
curl -k "https://<mgmt-
ip>/api/security/authentication/duo/groups/f810005a-d908-11ed-a6e6-
0050568e8ef2/test" --request PATCH --data "{\"comment\": \"Testing\"}"

# the response:
{}
----

=== Deleting a  Duo group

----

# The API:
DELETE "/api/security/authentication/duo/groups/{owner.uuid}/{group-name}"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/groups/f810005a-
d908-11ed-a6e6-0050568e8ef2/test --request DELETE

# the response:
{}
----
```

```
[[ID7a33ee9df6226bedeb771b211d2a4176]]
= Delete a Duo group configured for an SVM or cluster

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/duo/groups/{owner.uuid}/{name}`#

*Introduced In:* 9.14

Deletes a Duo group of the SVM or cluster.

== Related ONTAP commands

* `security login duo group delete`

== Learn more

*
xref:{relative_path}security_authentication_duo_groups_owner.uuid_name_end
point_overview.html[DOC
/security/authentication/duo/groups/{owner.uuid}/\{name}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID.


|name
|string
|path
```

```
|True
a|Group name.

|===

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====
```

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
```

```
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDdb292d8d41042d7eda295a6627b5824e]]
= Retrieve the Duo group configured for an SVM or cluster

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/duo/groups/{owner.uuid}/{name}`#

*Introduced In:* 9.14

Retrieves the Duo group configured for an SVM or cluster.

== Related ONTAP commands

* `security login duo group show`

== Learn more

*
xref:{relative_path}security_authentication_duo_groups_owner.uuid_name_end
point_overview.html[DOC
/security/authentication/duo/groups/{owner.uuid}/\{name}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters
```

```
[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID.


|name
|string
|path
|True
a|Group name.


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|comment
```

```
|string
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|name
|string
a|Name of the group to be included in Duo authentication.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo group profile is configured.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "excluded_users": [
    "user1",
    "user2"
  ],
  "name": "AD_Group",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
```

```
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
```

```
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo group profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDe8e32c8d75164bfa9a10d779eb692ad0]]
= Update a Duo group configured for an SVM or cluster

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/authentication/duo/groups/{owner.uuid}/{name}`#

*Introduced In:* 9.14

Updates a configured Duo group for a cluster or SVM.

== Related ONTAP commands

* `security login duo group modify`

== Learn more
```

```
*
xref:{relative_path}security_authentication_duo_groups_owner.uuid_name_end
point_overview.html[DOC
/security/authentication/duo/groups/{owner.uuid}/\{name}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID


|name
|string
|path
|True
a|Group name.

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|comment
|string
```

```
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "comment": "string",
  "excluded_users": [
    "user1",
    "user2"
  ]
}
====

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default, Error

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo group profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#duogroup]
[.api-collapsible-fifth-title]
duogroup

Group profile to include in Duo authentication.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|comment
|string
a|Comment for the Duo group.


|excluded_users
|array[string]
a|List of excluded users.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= View and create a Duo profile

:leveloffset: +1


[[ID68adf30007804e85ec757f66ce9ada0a]]
= Security authentication duo profiles endpoint overview
```

```
== Overview

This API configures the Duo profile for secure shell (SSH).

== Examples

=== Creating a Duo profile

Specify the integration key, secret key, API host, and other necessary
information in the body of the POST request. The owner.uuid or owner.name
are not required for a cluster-scoped account.

----

# The API:
POST "/api/security/authentication/duo/profiles"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/profiles
--request POST --data '{"api_host": "api-******.duosecurity.com",
"comment": "test post",  "fail_mode": "safe",  "integration_key":
"AAAA1A11A1AAA1AAA111", "secret_key":
"xxxxxxxxxq1QR20AAaZ6GRi6xxxxxxxxxxxxxx"}'

# The response:
{
}
----

=== Creating a Duo profile for an SVM-scoped account

For an SVM-scoped account, specify either the SVM name as the owner.name
or the SVM UUID as the owner.uuid along with other parameters for the Duo
profile. These parameters indicate the SVM that the Duo profile is being
created on and can be obtained from the response body of the GET request
performed on the API "/api/svm/svms".

----

# The API:
POST "/api/security/authentication/duo/profiles"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/duo/profiles
--request POST --data '{"api_host": "api-******.duosecurity.com",
"comment": "test post",  "fail_mode": "safe",  "integration_key":
"AAAA1A11A1AAA1AAA111", "secret_key":
```

```
"xxxxxxxxxgq1QR20AAaZ6GRixxxxxxxxxxxxxxxx", "owner.name":"vs0" }'

# The response:
{
}
----

=== Retrieving the configured Duo profile(s)

Retrieves the Duo profiles associated with the owners or filtered list
(for a specific SVM and so on).

----

# The API:
GET "/api/security/authentication/duo/profiles"

# The call to retrieve Duo profiles associated with Duo configured cluster
or SVM:
curl -k https://<mgmt-ip>/api/security/authentication/duo/profiles

# the response:
{
"records": [
{
  "owner": {
  "uuid": "5f618c80-d90a-11ed-a6e6-0050568e8ef2",
  "name": "vs0"
}
},
{
"owner": {
"uuid": "f810005a-d908-11ed-a6e6-0050568e8ef2",
"name": "tsmithcluster-1"
}
}
],
"num_records": 2
}
----





[[ID6b4f629cab198d60d7cff7696caf4dca]]
= Retrieve configured Duo profiles
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/duo/profiles`#

*Introduced In:* 9.14

Retrieves the configured Duo profiles.

== Related ONTAP commands

* `security login duo show`

== Learn more

*
xref:{relative_path}security_authentication_duo_profiles_endpoint_overview
.html[DOC /security/authentication/duo/profiles]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|comment
|string
|query
|False
a|Filter by comment


|max_prompts
|integer
|query
|False
a|Filter by max_prompts

* Max value: 3
* Min value: 1
```

```
|api_host
|string
|query
|False
a|Filter by api_host


|is_enabled
|boolean
|query
|False
a|Filter by is_enabled


|fingerprint
|string
|query
|False
a|Filter by fingerprint


|integration_key
|string
|query
|False
a|Filter by integration_key


|push_info
|boolean
|query
|False
a|Filter by push_info


|fail_mode
|string
|query
|False
a|Filter by fail_mode


|status
|string
|query
```

```
|False
a|Filter by status


|http_proxy
|string
|query
|False
a|Filter by http_proxy


|owner.name
|string
|query
|False
a|Filter by owner.name


|owner.uuid
|string
|query
|False
a|Filter by owner.uuid


|auto_push
|boolean
|query
|False
a|Filter by auto_push


|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_records
```

```
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Max value: 120
* Min value: 0
* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|num_records
|integer
a|Number of records.


|records
|array[link:#duo[duo]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "api_host": "api-****.duo.com",
      "auto_push": 1,
      "comment": "string",
      "fail_mode": "safe",
      "fingerprint": "string",
      "http_proxy": "IPaddress:port",
      "integration_key": "string",
      "is_enabled": 1,
      "max_prompts": 1,
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "push_info": 1,
      "status": "OK"
    }
  ]
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
```

```
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===
```

```
[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===
```

```
[#duo]
[.api-collapsible-fifth-title]
duo

Duo profile for the SVM or cluster-management server (Cserver).


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|api_host
|string
a|The URL at which the Duo API is hosted.


|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.


|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.


|http_proxy
```

```
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|status
|string
a|Information on the reachability status of Duo.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===
```

```
//end collapsible .Definitions block
====



[[ID87235d240c090c4dc2197c9e5fdf8629]]
= Create a Duo profile

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/duo/profiles`#

*Introduced In:* 9.14

Creates a Duo profile.

== Required properties

* `api_host` - Duo API host
* `integration_key` - Integration key
* `secret_key` - Secret key

== Related ONTAP commands

* `security login duo create`

== Learn more

*
xref:{relative_path}security_authentication_duo_profiles_endpoint_overview
.html[DOC /security/authentication/duo/profiles]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description
```

```
|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|api_host
|string
a|The URL at which the Duo API is hosted.


|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.


|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.
```

```
|http_proxy
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|secret_key
|string
a|The Secret Key associated with the Duo profile.


|status
|string
a|Information on the reachability status of Duo.


|===


.Example request
```

```
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "api_host": "api-****.duo.com",
  "auto_push": 1,
  "comment": "string",
  "fail_mode": "safe",
  "fingerprint": "string",
  "http_proxy": "IPaddress:port",
  "integration_key": "string",
  "is_enabled": 1,
  "max_prompts": 1,
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "push_info": 1,
  "secret_key": "string",
  "status": "OK"
}
====

== Response
```

Status: 201, Created

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|num_records
|integer
a|Number of records.


|records
|array[link:#duo[duo]]
a|

|===


.Example response
```

```
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "num_records": 1,
  "records": [
    {
      "api_host": "api-****.duo.com",
      "auto_push": 1,
      "comment": "string",
      "fail_mode": "safe",
      "fingerprint": "string",
      "http_proxy": "IPaddress:port",
      "integration_key": "string",
      "is_enabled": 1,
      "max_prompts": 1,
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "push_info": 1,
      "secret_key": "string",
      "status": "OK"
    }
  ]
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===
```

```
== Error
```

Status: Default, Error

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
```

```
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#duo]
[.api-collapsible-fifth-title]
duo

Duo profile for the SVM or cluster-management server (Cserver).


[cols=3*,options=header]
|===
|Name
|Type
|Description

|api_host
|string
a|The URL at which the Duo API is hosted.


|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.
```

```
|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.


|http_proxy
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|secret_key
|string
a|The Secret Key associated with the Duo profile.


|status
|string
a|Information on the reachability status of Duo.
```

```
|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code
```

```
|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage Duo profiles for an SVM or cluster

:leveloffset: +1


[[ID6b4ccd42d1ba90ebec8a35fde13021fd]]
= Security authentication duo profiles owner.uuid endpoint overview



== Overview

This API configures the Duo profile for an SVM.
Specify the owner UUID. The owner UUID corresponds to the UUID of the SVM
containing the Duo profile and can be obtained from the response body of
the GET request performed on the API "`/api/svm/svms".

== Examples

=== Retrieving the specific configured Duo profile of the cluster or SVM

----

# The API:
GET "/api/security/authentication/duo/profiles/{owner.uuid}"
```

```
# The call:
curl -k https://<mgmt-
ip>/api/security/authentication/duo/profiles/f810005a-d908-11ed-a6e6-
0050568e8ef2

# the response:
{
"owner": {
"uuid": "f810005a-d908-11ed-a6e6-0050568e8ef2",
"name": "cluster-1"
},
"integration_key": "AAAA1A11A1AAA1AAA111",
"fingerprint":
"xxxxxxxxxc8f58b1d52317e1212e9f067a958c387e5e2axxxxxxxxxxxxxxxxxx",
"api_host": "api-******.duosecurity.com",
"status": "Ok",
"is_enabled": true,
"auto_push": true,
"push_info": true,
"fail_mode": "safe",
"max_prompts": 1,
"comment": "Duo profile for Cserver",
}
----

=== Modifying the Duo profile

----

# The API:
PATCH "/api/security/authentication/duo/profiles/{owner.uuid}"

# The call:
curl -k "https://<mgmt-
ip>/api/security/authentication/duo/profiles/f810005a-d908-11ed-a6e6-
0050568e8ef2" --request PATCH --data "{  \"comment\": \"Testing\",
\"auto_push\": false}"

# the response:
{}
----

=== Deleting the Duo profile

----
```

```
# The API:
DELETE "/api/security/authentication/duo/profiles/{owner.uuid}"

# The call:
curl -k https://<mgmt-
ip>/api/security/authentication/duo/profiles/f810005a-d908-11ed-a6e6-
0050568e8ef2 --request DELETE

# the response:
{}
----





[[ID483139a99933905ffef737bf549f3b92]]
= Delete a Duo profile for an SVM or cluster

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/duo/profiles/{owner.uuid}`#

*Introduced In:* 9.14

Deletes the Duo profile of the SVM or cluster.

== Related ONTAP commands

* `security login duo delete`

== Learn more

*
xref:{relative_path}security_authentication_duo_profiles_owner.uuid_endpoi
nt_overview.html[DOC /security/authentication/duo/profiles/{owner.uuid}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
```

```
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID.

|===

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
```

```
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
```

```
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDb77b6b405390b69c6e161da6005828ac]]
= Retrieve a Duo profile configured for an SVM or cluster

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/duo/profiles/{owner.uuid}`#

*Introduced In:* 9.14

Retrieves the Duo profile configured for the cluster or an SVM.

== Related ONTAP commands

* `security login duo show`

== Learn more

*
xref:{relative_path}security_authentication_duo_profiles_owner.uuid_endpoi
nt_overview.html[DOC /security/authentication/duo/profiles/{owner.uuid}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
```

```
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID.


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|api_host
|string
a|The URL at which the Duo API is hosted.
```

```
|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.


|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.


|http_proxy
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
```

```
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|status
|string
a|Information on the reachability status of Duo.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "api_host": "api-****.duo.com",
  "auto_push": 1,
  "comment": "string",
  "fail_mode": "safe",
  "fingerprint": "string",
  "http_proxy": "IPaddress:port",
  "integration_key": "string",
  "is_enabled": 1,
  "max_prompts": 1,
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
```

```
  "push_info": 1,
  "status": "OK"
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
```

```
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID5151a1adc6bbca7bc85e56aea3b1047d]]
= Update a Duo profile configured for an SVM or cluster

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/authentication/duo/profiles/{owner.uuid}`#

*Introduced In:* 9.14

Updates a configured Duo profile for a cluster or an SVM.

== Related ONTAP commands

* `security login duo modify`
```

```
== Learn more

*
xref:{relative_path}security_authentication_duo_profiles_owner.uuid_endpoi
nt_overview.html[DOC /security/authentication/duo/profiles/{owner.uuid}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|api_host
|string
a|The URL at which the Duo API is hosted.


|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
```

```
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.


|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.


|http_proxy
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
```

```
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|secret_key
|string
a|The Secret Key associated with the Duo profile.


|status
|string
a|Information on the reachability status of Duo.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "api_host": "api-****.duo.com",
  "auto_push": 1,
  "comment": "string",
  "fail_mode": "safe",
  "fingerprint": "string",
  "http_proxy": "IPaddress:port",
  "integration_key": "string",
  "is_enabled": 1,
  "max_prompts": 1,
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "push_info": 1,
  "secret_key": "string",
  "status": "OK"
}
====

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default, Error

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#owner]
[.api-collapsible-fifth-title]
owner

SVM name and UUID for which the Duo profile is configured.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
```

```
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#duo]
[.api-collapsible-fifth-title]
duo

Duo profile for the SVM or cluster-management server (Cserver).


[cols=3*,options=header]
|===
|Name
|Type
|Description

|api_host
|string
a|The URL at which the Duo API is hosted.


|auto_push
|boolean
a|Automatically sends a push notification for authentication when using
Duo.


|comment
|string
a|Comment for the Duo profile.


|fail_mode
|string
a|Determines the behavior of the system when it cannot communicate with
the Duo service.
```

```
|fingerprint
|string
a|The SHA fingerprint corresponding to the Duo secret key.


|http_proxy
|string
a|Specifies the HTTP proxy server to be used when connecting to the Duo
service.


|integration_key
|string
a|The Integration Key associated with the Duo profile.


|is_enabled
|boolean
a|Indicates whether the Duo authentication feature is active or inactive.


|max_prompts
|integer
a|The maximum number of authentication attempts allowed for a user before
the process is terminated.


|owner
|link:#owner[owner]
a|SVM name and UUID for which the Duo profile is configured.


|push_info
|boolean
a|Additional information sent along with the push notification for Duo
authentication.


|secret_key
|string
a|The Secret Key associated with the Duo profile.


|status
|string
a|Information on the reachability status of Duo.
```

```
|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code
```

```
|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Update the user account password

:leveloffset: +1


[[ID02fb43664b0eab2435c088476dd5bafa]]
= Security authentication password endpoint overview



== Overview

This API changes the password for a local user account.

Only cluster administrators with the _"admin"_ role can change the
password for other cluster or SVM user accounts. If you are not a cluster
administrator, you can only change your own password.

== Examples

=== Changing the password of another cluster or SVM user account by a
cluster administrator

Specify the user account name and the new password in the body of the POST
request. The owner.uuid or owner.name are not required to be specified for
```

```
a cluster-scoped user account.

For an SVM-scoped account, along with new password and user account name,
specify either the SVM name as the owner.name or SVM uuid as the
owner.uuid in the body of the POST request. These indicate the SVM for
which the user account is created and can be obtained from the response
body of a GET request performed on the _/api/svm/svms_ API.

----

# The API:
POST "/api/security/authentication/password"

# The call to change the password of another cluster user:
curl -X POST "https://<mgmt-ip>/api/security/authentication/password" -d
'{"name":"cluster_user1","password":"hello@1234"}'
----

----

# The call to change the password of another SVM user:
curl -X POST "https://<mgmt-ip>/api/security/authentication/password" -d
'{"owner.name":"svm1","name":"svm_user1","password":"hello@1234"}'
----

----

# The call to change the password hash algorithm of the cluster user:
curl -X POST "https://<mgmt-ip>/api/security/authentication/password" -d
'{"name":"cluster_user1","password":"hello@1234","password_hash_algorithm"
:"sha256"}'
----

----

# The call to change the password hash algorithm of another SVM user:
curl -X POST "https://<mgmt-ip>/api/security/authentication/password" -d
'{"owner.name":"svm1","name":"svm_user1","password":"hello@1234","password
_hash_algorithm":"sha256"}'
----

=== Changing the password of an SVM-scoped user

NOTE: The IP address in the URI must be same as one of the interfaces
owned by the SVM.

----
```

```
# The API:
POST "/api/security/authentication/password"

# The call:
curl -X POST "https://<SVM-ip>/api/security/authentication/password" -d
'{"name":"svm_user1","password":"new1@1234"}'
----

'''




[[IDfa6d819c4a17c8fba7fb3125c996b1ca]]
= Update the user account password

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/password`#

*Introduced In:* 9.6

Updates the password for a user account.

== Required parameters

* `name` - User account name.
* `password` - New password for the user account.

== Optional parameters

* `owner.name` or `owner.uuid` - Name or UUID of the SVM for an SVM-scoped
user account.
* `password_hash_algorithm` - Optional property that specifies the
password hash algorithm used to generate a hash of the user's password for
password matching. Default value is "sha512".

== Related ONTAP commands

* `security login password`

== Learn more

*
xref:{relative_path}security_authentication_password_endpoint_overview.htm
l[DOC /security/authentication/password]
```

```
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The user account name whose password is being modified.


|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the user account. This
field is optional and valid only when a cluster administrator is executing
the API to uniquely identify the account whose password is being modified.
The "owner" field is not required to be specified for SVM user accounts
trying to modify their password.
```

```
|password
|string
a|The password string


|password_hash_algorithm
|string
a|Optional property that specifies the password hash algorithm used to
generate a hash of the user's password for password matching.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "name": "string",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "password": "string",
  "password_hash_algorithm": "sha512"
}
====

== Response
```

Status: 201, Created

```
=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 7077918
| The password cannot contain the username.

| 7077919
| The minimum length for new password does not meet the policy.

| 7077920
| The new password must have both letters and numbers.

| 7077921
| The minimum number of special characters required do not meet the
policy.

| 7077924
| The new password must be different than last N passwords.

| 7077925
| The new password must be different to the old password.
```

```
| 7077940
| The password exceeds maximum supported length.

| 7077941
| Defined password composition exceeds the maximum password length of 128
characters.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===



[#_links]
[.api-collapsible-fifth-title]
_links
[#owner]
[.api-collapsible-fifth-title]
owner

Owner name and UUID that uniquely identifies the user account. This field
is optional and valid only when a cluster administrator is executing the
```

```
API to uniquely identify the account whose password is being modified. The
"owner" field is not required to be specified for SVM user accounts trying
to modify their password.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#account_password]
[.api-collapsible-fifth-title]
account_password

The password object


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The user account name whose password is being modified.


|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the user account. This
field is optional and valid only when a cluster administrator is executing
```

```
the API to uniquely identify the account whose password is being modified.
The "owner" field is not required to be specified for SVM user accounts
trying to modify their password.


|password
|string
a|The password string


|password_hash_algorithm
|string
a|Optional property that specifies the password hash algorithm used to
generate a hash of the user's password for password matching.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage authentication keys (for admins)

:leveloffset: +1


[[ID65310dd0869ea336a1d4b98100036c06]]
= Security authentication publickeys endpoint overview



== Overview
```

```
This API configures the public keys for user accounts.

For secure shell (SSH) access, public-private key pair based
authentication is possible by associating the public key with a user
account.
Prerequisites:
You must have generated the SSH key.
You must be a cluster or SVM administrator to perform the user's public
key.

== Examples

=== Creating a public key for cluster-scoped user accounts

Specify the user account name, public key, index, comment, and optionally
the certificate in the body of the POST request. The owner.uuid or
owner.name are not required for a cluster-scoped user account.

----

# The API:
POST "/api/security/authentication/publickey"

# The call
curl -k https://<mgmt-ip>/api/security/authentication/publickeys --request
POST --data '{ "account": "pubuser2","comment": "Cserver-
Creation","index": 0, "certificate": "-----BEGIN CERTIFICATE-----
\nMIIFrTCCA5WgAwIBAgICEAMwDQYJKoZIhvcNAQELBQAwYDELMAkGA1UEBhMCVVMx\nCzAJBg
NVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzANBgNVBAoMBk5FVEFQUDENMAsG\nA1UECwwETlRBUD
EWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMjAeFw0yMzAxMTkwOTE4\nMzBaFw0yNDAxMjkwOTE4Mz
BaMFcxCzAJBgNVBAYTAklOMQswCQYDVQQIDAJLQTEM\nMAoGA1UEBwwDQkxSMQ0wCwYDVQQKDA
ROVEFQMQ0wCwYDVQQLDAROVEFQMQ8wDQYD\nVQQDDAZNWU5UQVAwggEiMA0GCSqGSIb3DQEBAQ
UAA4IBDwAwggEKAoIBAQDfkWQD\n4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiWmrmiqREh
96Asms4RxOHTI4Q1ox\nghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJgaZxIz
Bjla3x1QQ5\nrCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPtE4KQ
YQ\n2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n\n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvA\nTq0/7lavqoNi
wA4dAgMBAAGjggF4MIIBdDAJBgNVHRMEAjAAMBEGCWCGSAGG+EIB\nAQQEAwIGQDAzBglghkgB
hvhCAQ0EJhYkT3BlblNTTCBHZW5lcmF0ZWQgU2VydmVy\nIENlcnRpZmljYXRlMB0GA1UdDgQW
BBQkJGop1KmP0D5jkblSGk3nSGHf5jCBiwYD\nVR0jBIGDMIGAgBQqjApAoQETk23RqM0Fo7u6
0SsmL6FkpGIwYDELMAkGA1UEBhMC\nVVMxCzAJBgNVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzAN
BgNVBAoMBk5FVEFQUDEN\nMAsGA1UECwwETlRBUDEWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMYIC
EAAwDgYDVR0P\nAQH/BAQDAgWgMBMGA1UdJQQMMAoGCCsGAQUFBwMBME0GCCsGAQUFBwEBBEEw
PzA9\nBggrBgEFBQcwAYYxaHR0cDovL3Njc3ByMjY5Mjc4OTAyMS5nZGwuZW5nbGFiLm5l\ndG
FwcC5jb206MjU2MDANBgkqhkiG9w0BAQsFAAOCAgEASSs8BR96qNipv4X8ZS49\nhW5MpkuQmH
```

g2E7ICXYPP+r0qHeAa0fVpstLoju7ICo1HyfszwlncO8X2V37cQsCB\nMsMq1THVhKExPuAwUj
Tk6aP6kiun8Werr7rOqFKheZDkCxIMQ0E2mK+O5z6wZaqc\nOa1o4jmAEDUvLBYLYxa0qXa1Eu
nLpOOJTg0fkCW8SOwGDT7CWhpk1AiqivnGnsaz\nhN54gPbinI6La9elEfbNJSOLQUGzvp9nhk
FGNssx5tl0Ij+qzxV6DrzbY8qAeCH2\nrZnasMILUGISQC1LvxxeGcZ7da4AX3V8/ixHeKoUsk
5kA+ucHEB+GP15L0KGU5xa\nY/Uy7Uoh1GRPmvILelxzf2jK+z4x8hudJ9TUrskrLHkrsAm68e
W5IikIJmQsCBiM\nioGib6tWl250etSiC9byQ48W99yOlyShe8EQStogOeshXJfMyY7VZa0YA/
4KMtvi\nO+fxF6LdeFMeu0qxvYLYnIbNPmc2ohGrZwffnL/Kc9s9RF5dk9bjchCKuL3+bdBm\n
IdcvjGi1gGHzgvsg7W54/ctwFH/qW5N68SE7JCv0DtydjUhtlU34I1RfrJD72L3X\nLAb0KlLG
92Oun5psy49vprr143X7eOlGB4TNjUsXW9lNP/R8J3o1ZNnoZq7E32XI\ntsi/5Ttkq7aT975a
lerJoAU=\n-----END CERTIFICATE-----", "public_key": "ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDfkWQD4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiW
mrmiqREh96Asms4RxOHTI4Q1oxghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJ
gaZxIzBjla3x1QQ5rCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPt
E4KQYQ2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvATq0/7lavqoNiwA
4d" }'

=== Creating a public key for SVM-scoped user accounts

For a SVM-scoped account, specify either the SVM name as the owner.name or the SVM UUID as the owner.uuid along with other parameters for the user account. These parameters indicate the SVM that contains the user account for the public key being created and can be obtained from the response body of the GET request performed on the API"/api/svm/svms".

The API:
POST "/api/security/authentication/publickey"

The call
curl -k https://<mgmt-ip>/api/security/authentication/publickeys --request POST --data '{ "account": "pubuser4","comment": "Vserver-Creation","index": 0, "certificate": "-----BEGIN CERTIFICATE-----
\nMIIFrTCCA5WgAwIBAgICEAMwDQYJKoZIhvcNAQELBQAwYDELMAkGA1UEBhMCVVMx\nCzAJBg
NVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzANBgNVBAoMBk5FVEFQUDENMAsG\nA1UECwwETlRBUD
EWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMjAeFw0yMzAxMTkwOTE4\nMzBaFw0yNDAxMjkwOTE4Mz
BaMFcxCzAJBgNVBAYTAklOMQswCQYDVQQIDAJLQTEM\nMAoGA1UEBwwDQkxSMQ0wCwYDVQQKDA
ROVEFQMQ0wCwYDVQQLDAROVEFQMQ8wDQYD\nVQQDDAZNWU5UQVAwggEiMA0GCSqGSIb3DQEBAQ
UAA4IBDwAwggEKAoIBAQDfkWQD\n4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiWmrmiqREh
96Asms4RxOHTI4Q1ox\nghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJgaZxIz
Bjla3x1QQ5\nrCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPtE4KQ
YQ\n2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n\n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvA\nTq0/7lavqoNi
wA4dAgMBAAGjggF4MIIBdDAJBgNVHRMEAjAAMBEGCWCGSAGG+EIB\nAQQEAwIGQDAzBglghkgB

hvhCAQ0EJhYkT3BlblNTTCBHZW5lcmF0ZWQgU2VydmVy\nIENlcnRpZmljYXRlMB0GA1UdDgQW
BBQkJGop1KmP0D5jkblSGk3nSGHf5jCBiwYD\nVR0jBIGDMIGAgBQqjApAoQETk23RqM0Fo7u6
0SsmL6FkpGIwYDELMAkGA1UEBhMC\nVVMxCzAJBgNVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzAN
BgNVBAoMBk5FVEFQUDEN\nMAsGA1UECwwETlRBUDEWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMYIC
EAAwDgYDVR0P\nAQH/BAQDAgWgMBMGA1UdJQQMMAoGCCsGAQUFBwMBME0GCCsGAQUFBwEBBEEw
PzA9\nBggrBgEFBQcwAYYxaHR0cDovL3Njc3ByMjY5Mjc4OTAyMS5nZGwuZW5nbGFiLm5l\ndG
FwcC5jb206MjU2MDANBgkqhkiG9w0BAQsFAAOCAgEASSs8BR96qNipv4X8ZS49\nhW5MpkuQmH
g2E7ICXYPP+r0qHeAa0fVpstLoju7ICo1HyfszwlncO8X2V37cQsCB\nMsMq1THVhKExPuAwUj
Tk6aP6kiun8Werr7rOqFKheZDkCxIMQ0E2mK+O5z6wZaqc\nOa1o4jmAEDUvLBYLYxa0qXa1Eu
nLpOOJTg0fkCW8SOwGDT7CWhpk1AiqivnGnsaz\nhN54gPbinI6La9elEfbNJSOLQUGzvp9nhk
FGNssx5tl0Ij+qzxV6DrzbY8qAeCH2\nrZnasMILUGISQC1LvxxeGcZ7da4AX3V8/ixHeKoUsk
5kA+ucHEB+GP15L0KGU5xa\nY/Uy7Uoh1GRPmvILelxzf2jK+z4x8hudJ9TUrskrLHkrsAm68e
W5IikIJmQsCBiM\nioGib6tWl250etSiC9byQ48W99yOlyShe8EQStogOeshXJfMyY7VZa0YA/
4KMtvi\nO+fxF6LdeFMeu0qxvYLYnIbNPmc2ohGrZwffnL/Kc9s9RF5dk9bjchCKuL3+bdBm\n
IdcvjGi1gGHzgvsg7W54/ctwFH/qW5N68SE7JCv0DtydjUhtlU34I1RfrJD72L3X\nLAb0KlLG
92Oun5psy49vprr143X7eOlGB4TNjUsXW9lNP/R8J3o1ZNnoZq7E32XI\ntsi/5Ttkq7aT975a
lerJoAU=\n-----END CERTIFICATE-----", "owner.uuid":"513a78c7-8c13-11e9-
8f78-005056bbf6ac","owner.name":"vs0","public_key": "ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDfkWQD4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiW
mrmiqREh96Asms4RxOHTI4Q1oxghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJ
gaZxIzBjla3x1QQ5rCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPt
E4KQYQ2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvATq0/7lavqoNiwA
4d" }'

=== Retrieving the configured public key for user accounts

Retrieves all public keys associated with the user accounts or a filtered
list (for a specific user account name, a specific SVM and so on) of
public keys.

The API:
GET "/api/security/authentication/publickeys"

The call to retrieve all the user accounts configured in the cluster:
curl -k https://<mgmt-ip>/api/security/authentication/publickeys
----

[[ID072a95bd8bcc25f8252a5548c5e94d4c]]
= Retrieve public keys configured for user accounts

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/publickeys`#

*Introduced In:* 9.7

Retrieves the public keys configured for user accounts.

== Related ONTAP commands

* `security login publickey show`

== Learn more

*
xref:{relative_path}security_authentication_publickeys_endpoint_overview.h
tml[DOC /security/authentication/publickeys]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|certificate_details
|string
|query
|False
a|Filter by certificate_details

* Introduced in: 9.13


|owner.name
|string
|query
|False
a|Filter by owner.name
```

```
|owner.uuid
|string
|query
|False
a|Filter by owner.uuid


|obfuscated_fingerprint
|string
|query
|False
a|Filter by obfuscated_fingerprint


|certificate_revoked
|string
|query
|False
a|Filter by certificate_revoked

* Introduced in: 9.13


|account.name
|string
|query
|False
a|Filter by account.name


|scope
|string
|query
|False
a|Filter by scope


|public_key
|string
|query
|False
a|Filter by public_key


|index
|integer
```

```
|query
|False
a|Filter by index

* Max value: 99
* Min value: 0


|certificate
|string
|query
|False
a|Filter by certificate

* Introduced in: 9.13


|sha_fingerprint
|string
|query
|False
a|Filter by sha_fingerprint


|certificate_expired
|string
|query
|False
a|Filter by certificate_expired

* Introduced in: 9.13


|comment
|string
|query
|False
a|Filter by comment


|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Max value: 120
* Min value: 0
* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records


|records
|array[link:#publickey[publickey]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "account": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "name": "joe.smith"
      },
      "certificate": "string",
      "certificate_details": "string",
      "certificate_expired": "string",
      "certificate_revoked": "string",
      "comment": "string",
      "obfuscated_fingerprint": "string",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "public_key": "string",
      "scope": "string",
      "sha_fingerprint": "string"
    }
  ]
}
====

== Error
```


Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
```

```
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#account_reference]
[.api-collapsible-fifth-title]
account_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|User account


|===


[#owner]
[.api-collapsible-fifth-title]
owner

Owner name and UUID that uniquely identifies the public key.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#publickey]
[.api-collapsible-fifth-title]
publickey

The public key for the user account (to access SSH).


[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|account
|link:#account_reference[account_reference]
a|

|certificate
|string
a|Optional certificate for the public key.


|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|index
|integer
a|Index number for the public key (where there are multiple keys for the
same account).


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).
```

```
|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the public key.


|public_key
|string
a|The public key


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===
```

```
[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID955d449d05064cf09747f95915fb4184]]
= Create a public key for a user account

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/authentication/publickeys`#

*Introduced In:* 9.7
```

```
Creates a public key along with an optional certificate for a user
account.

== Required properties

* `owner.uuid` - UUID of the account owner.
* `name` - User account name.
* `index` - Index number for the public key (where there are multiple keys
for the same account).
* `public_key` - The publickey details for the creation of the user
account.

== Optional properties

* `comment` - Comment text for the public key.
* `certificate` - The certificate in PEM format.

== Related ONTAP commands

* `security login publickey create`

== Learn more

*
xref:{relative_path}security_authentication_publickeys_endpoint_overview.h
tml[DOC /security/authentication/publickeys]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.
```

```
* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|account
|link:#account_reference[account_reference]
a|

|certificate
|string
a|Optional certificate for the public key.


|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|index
|integer
a|Index number for the public key (where there are multiple keys for the
```

```
same account).


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).


|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the public key.


|public_key
|string
a|The public key


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "account": {
    "name": "joe.smith"
  },
  "certificate": "string",
  "certificate_details": "string",
  "certificate_expired": "string",
  "certificate_revoked": "string",
  "comment": "string",
  "obfuscated_fingerprint": "string",
  "owner": {
```

```
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "public_key": "string",
  "scope": "string",
  "sha_fingerprint": "string"
}
====

== Response
```

Status: 201, Created

```
=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 5832705
| Public key already exists for the given user and application.

| 5832707
| Failed to generate fingerprint for the public key.
```

```
| 5832722
| The public key cannot be associated with this user on the SVM because a
login method using the given application and authentication method does
not exist for this user.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#account_reference]
[.api-collapsible-fifth-title]
account_reference

[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|name
|string
a|User account


|===


[#owner]
[.api-collapsible-fifth-title]
owner

Owner name and UUID that uniquely identifies the public key.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#publickey]
[.api-collapsible-fifth-title]
publickey

The public key for the user account (to access SSH).


[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|account
|link:#account_reference[account_reference]
a|

|certificate
|string
a|Optional certificate for the public key.


|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|index
|integer
a|Index number for the public key (where there are multiple keys for the
same account).


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).


|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the public key.
```

```
|public_key
|string
a|The public key


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage authentication keys (end-users)

:leveloffset: +1


[[ID27d7df171496e999bfc7fbc940201d87]]
= Security authentication publickeys owner.uuid account.name index
endpoint overview
```

```
== Overview

This API configures the public keys for end-user (non-cluster admin)
accounts.
Specify the owner UUID, the user account name, and the index in the URI
path. The owner UUID corresponds to the UUID of the SVM containing the
user account associated with the public key and can be obtained from the
response body of the GET request performed on the API "`/api/svm/svms".

The index value corresponds to the public key that needs to be modified or
deleted (it is possible to create more than one public key for the same
user account).

== Examples

=== Retrieving the specific configured public key for user accounts

----

# The API:
GET
"/api/security/authentication/publickeys/{owner.uuid}/{account.name}/{inde
x}"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/publickeys/513a78c7-
8c13-11e9-8f78-005056bbf6ac/pubuser4/0
----

=== Updating the public key, certificate, and comment for user accounts

----

# The API:
PATCH
"/api/security/authentication/publickeys/{owner.uuid}/{account.name}/{inde
x}"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/publickeys/d49de271-
8c11-11e9-8f78-005056bbf6ac/pubuser1/0 --request PATCH --data '{
"comment": "Cserver-modification", "certificate": "-----BEGIN
CERTIFICATE-----
\nMIIFrTCCA5WgAwIBAgICEAMwDQYJKoZIhvcNAQELBQAwYDELMAkGA1UEBhMCVVMx\nCzAJBg
NVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzANBgNVBAoMBk5FVEFQUDENMAsG\nA1UECwwETlRBUD
EWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMjAeFw0yMzAxMTkwOTE4\nMzBaFw0yNDAxMjkwOTE4Mz
```

```
BaMFcxCzAJBgNVBAYTAklOMQswCQYDVQQIDAJLQTEM\nMAoGA1UEBwwDQkxSMQ0wCwYDVQQKDA
ROVEFQMQ0wCwYDVQQLDAROVEFQMQ8wDQYD\nVQQDDAZNWU5UQVAwggEiMA0GCSqGSIb3DQEBAQ
UAA4IBDwAwggEKAoIBAQDfkWQD\n4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiWmrmiqREh
96Asms4RxOHTI4Q1ox\nghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJgaZxIz
Bjla3x1QQ5\nrCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPtE4KQ
YQ\n2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n\n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvA\nTq0/7lavqoNi
wA4dAgMBAAGjggF4MIIBdDAJBgNVHRMEAjAAMBEGCWCGSAGG+EIB\nAQQEAwIGQDAzBglghkgB
hvhCAQ0EJhYkT3BlblNTTCBHZW5lcmF0ZWQgU2VydmVy\nIENlcnRpZmljYXRlMB0GA1UdDgQW
BBQkJGop1KmP0D5jkblSGk3nSGHf5jCBiwYD\nVR0jBIGDMIGAgBQqjApAoQETk23RqM0Fo7u6
0SsmL6FkpGIwYDELMAkGA1UEBhMC\nVVMxCzAJBgNVBAgMAk5DMQwwCgYDVQQHDANSVFAxDzAN
BgNVBAoMBk5FVEFQUDEN\nMAsGA1UECwwETlRBUDEWMBQGA1UEAwwNTlRBUC1JTlRFUkNBMYIC
EAAwDgYDVR0P\nAQH/BAQDAgWgMBMGA1UdJQQMMAoGCCsGAQUFBwMBME0GCCsGAQUFBwEBBEEw
PzA9\nBggrBgEFBQcwAYYxaHR0cDovL3Njc3ByMjY5Mjc4OTAyMS5nZGwuZW5nbGFiLm5l\ndG
FwcC5jb206MjU2MDANBgkqhkiG9w0BAQsFAAOCAgEASSs8BR96qNipv4X8ZS49\nhW5MpkuQmH
g2E7ICXYPP+r0qHeAa0fVpstLoju7ICo1Hyfszwlnc O8X2V37cQsCB\nMsMq1THVhKExPuAwUj
Tk6aP6kiun8Werr7rOqFKheZDkCxIMQ0E2mK+O5z6wZaqc\nOa1o4jmAEDUvLBYLYxa0qXa1Eu
nLpOOJTg0fkCW8SOwGDT7CWhpk1AiqivnGnsaz\nhN54gPbinI6La9elEfbNJSOLQUGzvp9nhk
FGNssx5tl0Ij+qzxV6DrzbY8qAeCH2\nrZnasMILUGISQC1LvxxeGcZ7da4AX3V8/ixHeKoUsk
5kA+ucHEB+GP15L0KGU5xa\nY/Uy7Uoh1GRPmvILelxzf2jK+z4x8hudJ9TUrskrLHkrsAm68e
W5IikIJmQsCBiM\nioGib6tWl250etSiC9byQ48W99yOlyShe8EQStogOeshXJfMyY7VZa0YA/
4KMtvi\nO+fxF6LdeFMeu0qxvYLYnIbNPmc2ohGrZwffnL/Kc9s9RF5dk9bjchCKuL3+bdBm\n
IdcvjGi1gGHzgvsg7W54/ctwFH/qW5N68SE7JCv0DtydjUhtlU34I1RfrJD72L3X\nLAb0KlLG
92Oun5psy49vprr143X7eOlGB4TNjUsXW9lNP/R8J3o1ZNnoZq7E32XI\ntsi/5Ttkq7aT975a
lerJoAU=\n-----END CERTIFICATE-----" , "public_key": "ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDfkWQD4kQcInzLQh95eNMXOP6AK9DIzM1e5V7350xTiW
mrmiqREh96Asms4RxOHTI4Q1oxghn3NugjWy/y9aCao+Uz6nIG8gAP+NIYb3TU/WeGJFKF6fRJ
gaZxIzBjla3x1QQ5rCWZMPuEiKZeBtnyHnoz6g3d5Cz4Ahu2mmHUDbAah25nNuYA9vbroP4GPt
E4KQYQ2lKtXnw8UKvyTYBOU3KzM2PP+lhtNmh3l/rgFhx99x1P6x8I8c6xRRQIjfIhHH9n8mLk
Elc3SMSeRNLIQn8JSd9gly6FyHDF2jsPWdRjTlPyvGeN+LNUsBrBgmeyuFvATq0/7lavqoNiwA
4d" }'
----

=== Deleting the public key for user accounts

----

# The API:
DELETE
"/api/security/authentication/publickeys/{owner.uuid}/{account.name}/{inde
x}"

# The call:
curl -k https://<mgmt-ip>/api/security/authentication/publickeys/d49de271-
8c11-11e9-8f78-005056bbf6ac/pubuser1/0 --request DELETE
----
```

```
[[ID63d6336b69e93d699c6cb04e530dc7b5]]
= Delete a public key for a user account

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/authentication/publickeys/{owner.uuid}/{account.name}/{i
ndex}`#

*Introduced In:* 9.7

Deletes the public key for a user account.

== Related ONTAP commands

* `security login publickey delete`

== Learn more

*
xref:{relative_path}security_authentication_publickeys_owner.uuid_account.
name_index_endpoint_overview.html[DOC
/security/authentication/publickeys/{owner.uuid}/{account.name}/\{index}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID
```

```
|account.name
|string
|path
|True
a|User account name


|index
|integer
|path
|True
a|Index number for the public key (where there are multiple keys for the
same account).

* Max value: 99
* Min value: 0

|===

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
```

```
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID5934c395deeb6055b57bba100f2b0317]]
= Retrieve public keys configured for a user account

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/authentication/publickeys/{owner.uuid}/{account.name}/{i
ndex}`#

*Introduced In:* 9.7

Retrieves the public keys configured for a user account.

== Related ONTAP commands
```

```
* `security login publickey show`

== Learn more

*
xref:{relative_path}security_authentication_publickeys_owner.uuid_account.
name_index_endpoint_overview.html[DOC
/security/authentication/publickeys/{owner.uuid}/{account.name}/\{index}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID


|account.name
|string
|path
|True
a|User account name


|index
|integer
|path
|True
a|Index number for the public key (where there are multiple keys for the
same account).

* Max value: 99
* Min value: 0
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Max value: 120
* Min value: 0
* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.
```

```
|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|account
|link:#account_reference[account_reference]
a|

|certificate
|string
a|Optional certificate for the public key.


|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|index
```

```
|integer
a|Index number for the public key (where there are multiple keys for the
same account).


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).


|owner
|link:#owner[owner]
a|Owner name and UUID that uniquely identifies the public key.


|public_key
|string
a|The public key


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "account": {
    "_links": {
      "self": {
```

```
        "href": "/api/resourcelink"
      }
    },
    "name": "joe.smith"
  },
  "certificate": "string",
  "certificate_details": "string",
  "certificate_expired": "string",
  "certificate_revoked": "string",
  "comment": "string",
  "obfuscated_fingerprint": "string",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "public_key": "string",
  "scope": "string",
  "sha_fingerprint": "string"
}
====

== Error
```


Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
```

```
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#account_reference]
[.api-collapsible-fifth-title]
account_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|User account


|===


[#owner]
[.api-collapsible-fifth-title]
owner

Owner name and UUID that uniquely identifies the public key.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID61c6bc52800f411bec90d4e6cf78bf87]]
= Update a public key for a user account

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/authentication/publickeys/{owner.uuid}/{account.name}/{i
ndex}`#

*Introduced In:* 9.7

Updates the public key and/or certificate for a user account.

== Related ONTAP commands

* `security login publickey modify`
```

```
== Learn more

*
xref:{relative_path}security_authentication_publickeys_owner.uuid_account.
name_index_endpoint_overview.html[DOC
/security/authentication/publickeys/{owner.uuid}/{account.name}/\{index}]
* xref:{relative_path}security_accounts_endpoint_overview.html[DOC
/security/accounts]


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|owner.uuid
|string
|path
|True
a|Account owner UUID


|account.name
|string
|path
|True
a|User account name


|index
|integer
|path
|True
a|Index number for the public key (where there are multiple keys for the
same account).

* Max value: 99
* Min value: 0

|===
```

```
== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|certificate
|string
a|Optional certificate for the public key.


|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).


|public_key
|string
a|The public key


|scope
|string
```

```
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "certificate": "string",
  "certificate_details": "string",
  "certificate_expired": "string",
  "certificate_revoked": "string",
  "comment": "string",
  "obfuscated_fingerprint": "string",
  "public_key": "string",
  "scope": "string",
  "sha_fingerprint": "string"
}
====
```

```
== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 5832707
| Failed to generate fingerprint for the public key.
|===
```

```
Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#account_reference]
[.api-collapsible-fifth-title]
account_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|User account
```

```
|===


[#owner]
[.api-collapsible-fifth-title]
owner

Owner name and UUID that uniquely identifies the public key.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#publickey]
[.api-collapsible-fifth-title]
publickey

The public key for the user account (to access SSH).


[cols=3*,options=header]
|===
|Name
|Type
|Description

|certificate
|string
a|Optional certificate for the public key.
```

```
|certificate_details
|string
a|The details present in the certificate (READONLY).


|certificate_expired
|string
a|The expiration details of the certificate (READONLY).


|certificate_revoked
|string
a|The revocation details of the certificate (READONLY).


|comment
|string
a|Optional comment for the public key.


|obfuscated_fingerprint
|string
a|The obfuscated fingerprint for the public key (READONLY).


|public_key
|string
a|The public key


|scope
|string
a|Scope of the entity. Set to "cluster" for cluster owned objects and to
"svm" for SVM owned objects.


|sha_fingerprint
|string
a|The SHA fingerprint for the public key (READONLY).


|===


[#error_arguments]
```

```
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage AWS KMS

:leveloffset: +1


[[IDe37ad294249ad8a6eda2ab27caa07092]]
= Security aws-kms endpoint overview



== Overview

Amazon Web Services Key Management Services (AWS KMS) is a cloud key
management service (KMS) that provides a secure store for secrets. This
feature allows ONTAP to securely store its encryption keys using AWS KMS.
In order to use AWS KMS with ONTAP, you must first create a
Customer Master Key (CMK) in AWS KMS and provide an Access Key ID and
Secret Access Key for a user that has appropriate access to the newly
created CMK in the AWS KMS."

== Examples

=== Enabling AWS KMS for an SVM

The following example shows how to enable AWS KMS at the SVM-scope. Note
the _return_records=true_ query parameter is used to obtain the newly
created key manager configuration.

----

# The API:
```

```
POST /api/security/aws-kms

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/aws-kms?return_records=true'
-H 'accept: application/hal+json' -d '{"svm":{"uuid":"f36ff553-e713-11ea-
bd56-005056bb4222" }, "region": "us-east-1", "key_id": "kmip-aws",
"access_key_id": "AK7ATC35ZXU6GKUDQURT", "secret_access_key": "Ahrut-
#ghty5-881Ht"}'

# The response:
{
"num_records": 1,
"records": [
    {
    "uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
    "svm": {
        "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
        "name": "vs0"
    },
    "region": "us-east-1",
    "key_id": "kmip-aws",
    "access_key_id": "AK7ATC35ZXU6GKUDQURT",
    "_links": {
        "self": {
        "href": "/api/security/aws-kms/f72098a2-e908-11ea-bd56-
005056bb4222"
            }
        }
    }
]
}
----

'''

=== Retrieving all AWS KMS configurations

The following example shows how to retrieve all AWS KMS configurations.

----

# The API:
GET /api/security/aws-kms

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/aws-kms?fields=*'
```

```
# The response:
{
"records": [
    {
    "uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
    "scope": "svm",
    "svm": {
        "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
        "name": "vs0"
    },
    "region": "us-east-1",
    "key_id": "kmip-aws",
    "access_key_id": "AK7ATC35ZXU6GKUDQURT",
    "service": "KMS",
    "default_domain": "amazonaws.com",
    "polling_period": 60,
    "timeout": 10,
    "_links": {
        "self": {
        "href": "/api/security/aws-kms/f72098a2-e908-11ea-bd56-
005056bb4222"
            }
        }
    }
],
"num_records": 1,
"_links": {
    "self": {
    "href": "/api/security/aws-kms?fields=*"
    }
}
}
----

'''

=== Retrieving a specific AWS KMS configuration

The following example shows how to retrieve information for a specific AWS
KMS configuration.

----

# The API:
GET /api/security/aws-kms/{uuid}
```

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/security/aws-kms/f72098a2-e908-11ea-
bd56-005056bb4222?fields=*'

# The response:
{
"uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
"scope": "svm",
"svm": {
    "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
    "name": "vs0"
},
"region": "us-east-1",
"key_id": "kmip-aws",
"access_key_id": "AK7ATC35ZXU6GKUDQURT",
"service": "KMS",
"default_domain": "amazonaws.com",
"polling_period": 60,
"timeout": 10,
"_links": {
    "self": {
    "href": "/api/security/aws-kms/f72098a2-e908-11ea-bd56-005056bb4222"
    }
}
}
----

'''

=== Retrieving the advanced properties of an AWS configured for a specific
SVM

These values are not retrieved by default with the 'fields=*' option.
The following example retrieves the advanced properties of a configured
AWS for a specific SVM; there is an added computational cost in retrieving
their values. The properties are not populated for either a collection GET
or an instance GET unless they are explicitly requested using the `fields`
query parameter or GET for all advanced properties is enabled.

----

# The API:
GET /api/security/aws-kms

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/aws-kms/7052c6c0-a503-11ec-
```

```
a68f-005056ac75a0/?fields=state,amazon_reachability,ekmip_reachability'

# The response:
{
"uuid": "d70efc34-aa13-11ec-a059-005056ac7c32",
"state": {
  "cluster_state": true,
  "message": "",
  "code": "0"
},
"amazon_reachability": {
  "reachable": true,
  "message": "",
  "code": "0"
},
"ekmip_reachability": [
  {
    "reachable": true,
    "message": "",
    "code": "0",
    "node": {
      "uuid": "817f544f-a98d-11ec-ae20-005056ac7c32",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/817f544f-a98d-11ec-ae20-
005056ac7c32"
        }
      }
    }
  },
  {
    "reachable": true,
    "message": "",
    "code": "0",
    "node": {
      "uuid": "84b3f5f3-a98d-11ec-9ff4-005056acfbfe",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/84b3f5f3-a98d-11ec-9ff4-
005056acfbfe"
        }
      }
    }
  }
```

```
],
"_links": {
  "self": {
    "href": "/api/security/aws-kms/d70efc34-aa13-11ec-a059-005056ac7c32"
  }
}
}
----

'''

=== Updating the "access_key_id" of a specific AWS KMS configuration

The following example shows how to update the "access_key_id" for a
specific AWS KMS configuration.

----

# The API:
PATCH /api/security/aws-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/aws-kms/f72098a2-e908-11ea-
bd56-005056bb4222/' -d '{"access_key_id": "AK7ATC35ZXU6GKUDQURT",
"secret_access_key": "Ahrut-#ghty5-881Ht"}'
----

'''

=== Updating a specific AWS KMS configuration to allow it to use a proxy.

The following example shows how to update a specific AWS KMS configuration
to allow the AWS KMS instance to use a proxy.

----

# The API:
PATCH /api/security/aws-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/aws-kms/f72098a2-e908-11ea-
bd56-005056bb4222/' -d '{"default_domain": "216.9", "host":
"172.20.216.9", "port": 8000, "service": "10", "verify_host": false,
"verify_ip": false}'
----

'''
```

```
=== Deleting a specific AWS KMS configuration

The following example shows how to delete a specific AWS KMS
configuration.

----

# The API:
DELETE /api/security/aws-kms/{uuid}

# The call;
curl -X DELETE 'https://<mgmt-ip>/api/security/aws-kms/f72098a2-e908-11ea-
bd56-005056bb4222'
----

'''

=== Restoring keys from a KMIP server

The following example shows how to restore keys for a AWS KMS
configuration.

----

# The API:
POST /api/security/aws-kms/{uuid}/restore

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/aws-kms/33820b57-ec90-11ea-
875e-005056bbf3f0/restore'
----

'''





[[IDdc3878db2aa743c9e775405d2ac2eb78]]
= Retrieve all AWS KMS instances configured for all clusters and SVMs

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/aws-kms`#

*Introduced In:* 9.12
```

```
Retrieves all AWS KMS instances configured for all clusters and SVMs.

== Related ONTAP commands

* `security key-manager external aws show`
* `security key-manager external aws check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|region
|string
|query
|False
a|Filter by region


|polling_period
|integer
|query
|False
a|Filter by polling_period


|uuid
|string
|query
|False
a|Filter by uuid


|port
|integer
|query
|False
a|Filter by port
```

```
|proxy_host
|string
|query
|False
a|Filter by proxy_host


|svm.name
|string
|query
|False
a|Filter by svm.name


|svm.uuid
|string
|query
|False
a|Filter by svm.uuid


|amazon_reachability.reachable
|boolean
|query
|False
a|Filter by amazon_reachability.reachable


|amazon_reachability.code
|string
|query
|False
a|Filter by amazon_reachability.code


|amazon_reachability.message
|string
|query
|False
a|Filter by amazon_reachability.message


|encryption_context
|string
|query
|False
a|Filter by encryption_context
```

```
|host
|string
|query
|False
a|Filter by host


|scope
|string
|query
|False
a|Filter by scope


|proxy_port
|integer
|query
|False
a|Filter by proxy_port


|verify_ip
|boolean
|query
|False
a|Filter by verify_ip


|access_key_id
|string
|query
|False
a|Filter by access_key_id


|key_id
|string
|query
|False
a|Filter by key_id


|proxy_username
|string
|query
```

```
|False
a|Filter by proxy_username


|verify
|boolean
|query
|False
a|Filter by verify


|proxy_type
|string
|query
|False
a|Filter by proxy_type


|service
|string
|query
|False
a|Filter by service


|verify_host
|boolean
|query
|False
a|Filter by verify_host


|skip_verify
|boolean
|query
|False
a|Filter by skip_verify


|default_domain
|string
|query
|False
a|Filter by default_domain


|ekmip_reachability.node.uuid
```

```
|string
|query
|False
a|Filter by ekmip_reachability.node.uuid


|ekmip_reachability.node.name
|string
|query
|False
a|Filter by ekmip_reachability.node.name


|ekmip_reachability.message
|string
|query
|False
a|Filter by ekmip_reachability.message


|ekmip_reachability.reachable
|boolean
|query
|False
a|Filter by ekmip_reachability.reachable


|ekmip_reachability.code
|string
|query
|False
a|Filter by ekmip_reachability.code


|state.cluster_state
|boolean
|query
|False
a|Filter by state.cluster_state


|state.message
|string
|query
|False
a|Filter by state.message
```

```
|state.code
|string
|query
|False
a|Filter by state.code


|timeout
|integer
|query
|False
a|Filter by timeout


|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
```

```
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records


|records
|array[link:#aws_kms[aws_kms]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
```

```
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_key_id": "<id_value>",
      "amazon_reachability": {
        "code": "346758",
        "message": "Amazon KMS is not reachable from all nodes -
<reason>."
      },
      "default_domain": "domainName",
      "ekmip_reachability": [
        {
          "code": "346758",
          "message": "embedded KMIP server status unavailable on node.",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "encryption_context": "aws:fsx:fs-id=fs-0785c8beceb895999",
      "host": "aws-host.host.com",
      "key_id": "kmip-aws",
      "polling_period": 55,
      "port": 443,
      "proxy_host": "proxy.eng.com",
      "proxy_port": 1234,
      "proxy_type": "http",
```

```
      "proxy_username": "proxyuser",
      "region": "us-east-1",
      "scope": "string",
      "service": "dynamodb.*.amazonaws.com",
      "skip_verify": "",
      "state": {
        "code": "346758",
        "message": "AWS KMS key protection is unavailable on the following
nodes: node1, node2."
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "timeout": 20,
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "verify": "",
      "verify_host": 1,
      "verify_ip": ""
    }
  ]
}
====

== Error
```


Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537551
| Top-level internal key protection key (KEK) unavailable on one or more
nodes.

| 65537552
| Embedded KMIP server status not available.
```

```
| 65537915
| The Amazon Web Service Key Management Service is unreachable from one or
more nodes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
```

```
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#amazon_reachability]
[.api-collapsible-fifth-title]
amazon_reachability

Indicates whether or not the Amazon KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if Amazon KMS is
reachable from all nodes in the cluster.


|message
|string
a|Error message returned when 'reachable' is false.


|reachable
|boolean
a|Set to true if the Amazon KMS is reachable from all nodes of the
cluster.
```

```
|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when AWS KMS key protection is available on all nodes of the
cluster.


|code
```

```
|string
a|Code corresponding to the message. Returns a 0 if AWS KMS key protection
is available on all nodes of the cluster.


|message
|string
a|Error message set when cluster_state is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#aws_kms]
[.api-collapsible-fifth-title]
aws_kms
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.


|key_id
```

```
|string
a|AWS Key ID.


|polling_period
|integer
a|Polling period in minutes.


|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.


|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|service
|string
```

```
a|AWS service type.


|skip_verify
|boolean
a|Set to true to bypass verification of the user provided access_key_id
and secret_access_key. An error will be returned if 'skip_verify' is
provided but 'access_key_id' is not.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|AWS Connection timeout, in seconds.


|uuid
|string
a|A unique identifier for the AWS KMS.


|verify
|boolean
a|Set to true to verify the AWS KMS host.


|verify_host
|boolean
a|Set to true to verify the AWS KMS host's hostname.


|verify_ip
|boolean
a|Set to true to verify the AWS KMS host's IP address.


|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
```

```
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID0e8e7dc9d01fd43ead952bf6dbc052aa]]
= Configure the AWS KMS configuration for an SVM

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/aws-kms`#

*Introduced In:* 9.12

Configures the AWS KMS configuration for the specified SVM.

== Required properties

* `access_key_id` - AWS access key ID of the user who has the appropriate
access to AWS KMS.
* `secret_access_key` - AWS secret access key for the access key ID
provided.
* `svm.uuid` or `svm.name` - Existing SVM in which to create an AWS KMS.
* `region` - AWS region of the AWS KMS.
* `key_id` - AWS Key ID

== Optional properties

* `service` - AWS service type.
* `default_domain` - AWS KMS default domain.
* `host` - AWS KMS host's hostname.
* `port` - AWS KMS port.
* `proxy_type` - Type of proxy (http, https, etc.), if proxy configuration
is used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `proxy_username` - Proxy username if proxy configuration is used.
```

```
* `proxy_password` - Proxy password if proxy configuration is used.
* `polling_period` - Polling period in minutes.
* `encryption_context` - Additional layer of authentication and logging.

== Related ONTAP commands

* `security key-manager external aws enable`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===
```

```
== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.
```

```
|key_id
|string
a|AWS Key ID.


|polling_period
|integer
a|Polling period in minutes.


|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.


|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.
```

```
|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|secret_access_key
|string
a|AWS Secret Access Key for the provided access key ID.


|service
|string
a|AWS service type.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|uuid
|string
a|A unique identifier for the AWS KMS.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "access_key_id": "<id_value>",
  "amazon_reachability": {
    "code": "346758",
    "message": "Amazon KMS is not reachable from all nodes - <reason>."
  },
  "default_domain": "domainName",
  "ekmip_reachability": [
```

```
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "encryption_context": "aws:fsx:fs-id=fs-0785c8beceb895999",
  "host": "aws-host.host.com",
  "key_id": "kmip-aws",
  "polling_period": 55,
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_password": "awskze-Jwjje2-WJJPer",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "region": "us-east-1",
  "scope": "string",
  "secret_access_key": "<id_value>",
  "service": "dynamodb.*.amazonaws.com",
  "skip_verify": "",
  "state": {
    "code": "346758",
    "message": "AWS KMS key protection is unavailable on the following
nodes: node1, node2."
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "verify": "",
  "verify_host": 1,
  "verify_ip": ""
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 3735622
| Certificate type not supported for create operation.

| 3735645
| You cannot specify a value for serial as it is generated automatically.

| 3735657
| Specifying \"-subtype\" when creating a certificate is not supported.

| 3735664
| Specified key size is not supported in FIPS mode.

| 3735665
| Specified hash function is not supported in FIPS mode.

| 3735700
| Specified key size is not supported.

| 65536600
| Nodes are out of quorum.

| 65537518
| Failed to find a LIF with Cluster role on node. One or more nodes may be
out of quorum.

| 65537900
| Failed to enable the Amazon Web Service Key Management Service for an
SVM due to an invalid secret access key.

| 65537901
| The Amazon Web Service Key Management Service (AWSKMS) cannot be enabled
because all nodes in the cluster are not running a version that supports
the AWSKMS feature.

| 65537906
| Failed to store the secret access key.
```

```
| 65537907
| The Amazon Web Service Key Management Service is disabled on the
cluster. For further assistance, contact technical support.

| 65537908
| The Amazon Web Service Key Management Service is not supported for the
admin SVM.

| 65537910
| Failed to configure Amazon Web Service Key Management Service for an SVM
because a key manager has already been configured for the SVM.

| 65537911
| The Amazon Web Service Key Management Service is not supported in
MetroCluster configurations.

| 65537912
| The Amazon Web Service Key Management Service cannot be configured for
an SVM because one or more volume encryption keys of the SVM are stored on
the admin SVM.

| 65537926
| The Amazon Web Service Key Management Service is not configured for this
SVM.

| 65539704
| The key manager cannot be configured because the SVM has NAE volumes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#amazon_reachability]
[.api-collapsible-fifth-title]
amazon_reachability

Indicates whether or not the Amazon KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if Amazon KMS is
reachable from all nodes in the cluster.


|message
|string
a|Error message returned when 'reachable' is false.


|reachable
|boolean
```

```
a|Set to true if the Amazon KMS is reachable from all nodes of the
cluster.


|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when AWS KMS key protection is available on all nodes of the
cluster.


|code
```

```
|string
a|Code corresponding to the message. Returns a 0 if AWS KMS key protection
is available on all nodes of the cluster.


|message
|string
a|Error message set when cluster_state is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#aws_kms]
[.api-collapsible-fifth-title]
aws_kms

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.


|key_id
|string
a|AWS Key ID.
```

```
|polling_period
|integer
a|Polling period in minutes.


|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.


|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|secret_access_key
```

```
|string
a|AWS Secret Access Key for the provided access key ID.


|service
|string
a|AWS service type.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|uuid
|string
a|A unique identifier for the AWS KMS.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID3807449c0b446e47fbe47e94c8a3ea14]]
= Re-key or re-version an AWS KMS key encryption key for AWS KMS

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/aws-kms/{aws_kms.uuid}/rekey-external`#

*Introduced In:* 9.12

Rekeys or re-versions the AWS KMS Key Encryption Key (KEK) for the given
AWS KMS.

== Related ONTAP commands

* `security key-manager external aws rekey-external`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|aws_kms.uuid
|string
|path
|True
a|UUID of the existing AWS KMS configuration.
```

```
|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier of the AWS KMS key encryption key.


|===


.Example request
```

```
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "key_id": "key01"
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537538
| Internal error. Failed to get unwrapped key for a given key ID.

| 65537543
| Internal Error. Missing top-level internal key protection key (KEK) on a
node.

| 65537547
| One or more volume encryption keys for encrypted volumes of this data
SVM are stored in the key manager configured for the admin SVM. Use the
REST API POST method to migrate this data SVM's keys from the admin SVM's
key manager before running the rekey operation.

| 65537610
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being switched. If a previous attempt to switch the
keystore configuration failed, or was interrupted, the system will
continue to prevent rekeying for the SVM. Use the REST API PATCH method
"/api/security/key-stores/\{uuid}" to re-run and complete the operation.

| 65537919
| External rekey failed on one or more nodes.

| 65537926
| AWS KMS is not configured for the given SVM.

| 65539436
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being initialized. Wait until the keystore is in the
active state, and rerun the rekey operation.

| 65539437
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being disabled.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions
```

```
[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#aws_kms_key]
[.api-collapsible-fifth-title]
aws_kms_key

[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier of the AWS KMS key encryption key.


|===


[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDa9a9dc66b0d9c3e4645a09f48e3caf16]]
= Re-key SVM KEK for an AWS KMS

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/aws-kms/{aws_kms.uuid}/rekey-internal`#

*Introduced In:* 9.12

Rekeys SVM KEK for the given AWS KMS.

== Related ONTAP commands

* `security key-manager external aws rekey-internal`


== Parameters
```

```
[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|aws_kms.uuid
|string
|path
|True
a|UUID of the existing AWS KMS configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537547
| One or more volume encryption keys for encrypted volumes of this data
SVM are stored in the key manager configured for the admin SVM. Use the
REST API POST method to migrate this data SVM's keys from the admin SVM's
key manager to this data SVM's key manager before running the rekey
operation.

| 65537556
| Unable to successfully encrypt or decrypt because the configured
external key manager for the given SVM is in a blocked state.

| 65537559
| There are no existing internal keys for the SVM. A rekey operation is
allowed for an SVM with one or more encryption keys.

| 65537566
| Internal error. All nodes in the cluster are not currently online.

| 65537610
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being switched. If a previous attempt to switch the
keystore configuration failed, or was interrupted, the system will
continue to prevent rekeying for the SVM. Use the REST API PATCH method
"/api/security/key-stores/\{uuid}" to re-run and complete the operation.

| 65537926
| AWS KMS is not configured for the given SVM.

| 65539436
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being initialized. Wait until the keystore is in the
active state, and rerun the rekey operation.

| 65539437
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being disabled.
```

```
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
```

```
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code
```

```
|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID d2fc51fc2241f45cb1fa052c9973adb1]]
= Restore keys for an SVM from a configured AWS KMS

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/aws-kms/{aws_kms.uuid}/restore`#

*Introduced In:* 9.12

Restores the keys for an SVM from a configured AWS KMS.

== Related ONTAP commands

* `security key-manager external AWS restore`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|aws_kms.uuid
```

```
|string
|path
|True
a|UUID of the existing AWS KMS configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536082
| Unable to restore all keys.

| 65537544
| Missing wrapped top-level internal key protection key (KEK) from
internal database.

| 65537926
| The Amazon Web Service Key Management Service is not configured for the
given SVM.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
```

```
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument
```

```
|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDddef6464a0c03ccd96ddeb6453ac6c78]]
= Delete an AWS KMS configuration

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/aws-kms/{uuid}`#
```

```
*Introduced In:* 9.12

Deletes an AWS KMS configuration.

== Related ONTAP commands

* `security key-manager external aws disable`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|AWS KMS UUID


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Response
```

Status: 200, Ok

```
== Response
```

Status: 202, Accepted

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536817
| Internal error. Failed to determine if it is safe to disable key
manager.

| 65536827
| Internal error. Failed to determine if the given SVM has any encrypted
volumes.

| 65536834
| Internal error. Failed to get existing key-server details for the given
SVM.

| 65536883
| Internal error. Volume encryption key is missing for a volume.

| 65536884
| Internal error. Volume encryption key is invalid for a volume.

| 65537106
| Volume encryption keys (VEK) for one or more encrypted volumes are
stored on the key manager configured for the given SVM.

| 65537926
| Amazon Web Service Key Management Service is not configured for SVM.

| 196608080
| One or more nodes in the cluster have the root volume encrypted using
NVE (NetApp Volume Encryption).
```

```
| 196608301
| Internal error. Failed to get encryption type.

| 196608332
| NAE aggregates found in the cluster.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions
```

```
[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code
```

```
|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID5330a7bf85eb449269db7a3dfbe4819a]]
= Retrieve an AWS KMS configuration

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/aws-kms/{uuid}`#

*Introduced In:* 9.12

Retrieves the AWS KMS configuration for the SVM specified by the UUID.

== Related ONTAP commands

* `security key-manager external aws show`
* `security key-manager external aws check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
```

```
|string
|path
|True
a|AWS KMS UUID


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
```

```
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.


|key_id
|string
a|AWS Key ID.


|polling_period
|integer
a|Polling period in minutes.


|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.
```

```
|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|service
|string
a|AWS service type.


|skip_verify
|boolean
a|Set to true to bypass verification of the user provided access_key_id
and secret_access_key. An error will be returned if 'skip_verify' is
provided but 'access_key_id' is not.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|AWS Connection timeout, in seconds.


|uuid
|string
a|A unique identifier for the AWS KMS.
```

```
|verify
|boolean
a|Set to true to verify the AWS KMS host.


|verify_host
|boolean
a|Set to true to verify the AWS KMS host's hostname.


|verify_ip
|boolean
a|Set to true to verify the AWS KMS host's IP address.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_key_id": "<id_value>",
  "amazon_reachability": {
    "code": "346758",
    "message": "Amazon KMS is not reachable from all nodes - <reason>."
  },
  "default_domain": "domainName",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "encryption_context": "aws:fsx:fs-id=fs-0785c8beceb895999",
  "host": "aws-host.host.com",
  "key_id": "kmip-aws",
  "polling_period": 55,
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "region": "us-east-1",
  "scope": "string",
  "service": "dynamodb.*.amazonaws.com",
  "skip_verify": "",
  "state": {
    "code": "346758",
    "message": "AWS KMS key protection is unavailable on the following
nodes: node1, node2."
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timeout": 20,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "verify": "",
  "verify_host": 1,
  "verify_ip": ""
}
====

== Error
```


Status: Default

```
ONTAP Error Response Codes
```

```
|===
| Error Code | Description

| 65537551
| Top-level internal key protection key (KEK) unavailable on one or more
nodes.

| 65537552
| Embedded KMIP server status not available.

| 65537915
| The Amazon Web Service Key Management Service is unreachable from one or
more nodes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
```

```
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===
```

```
[#amazon_reachability]
[.api-collapsible-fifth-title]
amazon_reachability

Indicates whether or not the Amazon KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if Amazon KMS is
reachable from all nodes in the cluster.


|message
|string
a|Error message returned when 'reachable' is false.


|reachable
|boolean
a|Set to true if the Amazon KMS is reachable from all nodes of the
cluster.


|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
```

```
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when AWS KMS key protection is available on all nodes of the
cluster.


|code
|string
a|Code corresponding to the message. Returns a 0 if AWS KMS key protection
is available on all nodes of the cluster.


|message
|string
a|Error message set when cluster_state is false.
```

```
|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code
```

```
|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====
```

```
[[IDd77bc25908ea631d692d9a3881d00972]]
= Update an AWS KMS configuration

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/aws-kms/{uuid}`#

*Introduced In:* 9.12

Updates the AWS KMS configuration.

== Optional properties

* `region` - AWS region of the AWS KMS.
* `service` - AWS service type.
* `default_domain` - AWS KMS default domain.
* `port` - AWS KMS port.
* `proxy_type` - Type of proxy (http, https, etc.), if proxy configuration
is used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `proxy_username` - Proxy username if proxy configuration is used.
* `proxy_password` - Proxy password if proxy configuration is used.
* `polling_period` - Polling period in minutes.
* `timeout` - AWS Connection timeout, in seconds.
* `verify` - Set to true to verify the AWS KMS host.
* `verify_host` - Set to true to verify the AWS KMS host's hostname.
* `verify_ip` - Set to true to verify the AWS KMS host's IP address.
* `host` - AWS KMS host's hostname.
* `secret_access_key` - AWS secret access key for the access key ID
provided.
* `access_key_id` - AWS access key ID of the user with the appropriate
access to AWS KMS.
* `skip_verify` - Set to true to bypass verification of the user provided
access_key_id and secret_access_key.
* `encryption_context` - Additional layer of authentication and logging.

== Related ONTAP commands

* `security key-manager external aws update-config`
* `security key-manager external aws update-credentials`


== Parameters

[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|AWS KMS UUID


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
```

```
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.


|polling_period
|integer
a|Polling period in minutes.


|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.
```

```
|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.


|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|secret_access_key
|string
a|AWS Secret Access Key for the provided access key ID.


|service
|string
a|AWS service type.


|skip_verify
|boolean
a|Set to true to bypass verification of the user provided access_key_id
and secret_access_key. An error will be returned if 'skip_verify' is
```

```
provided but 'access_key_id' is not.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|timeout
|integer
a|AWS Connection timeout, in seconds.


|uuid
|string
a|A unique identifier for the AWS KMS.


|verify
|boolean
a|Set to true to verify the AWS KMS host.


|verify_host
|boolean
a|Set to true to verify the AWS KMS host's hostname.


|verify_ip
|boolean
a|Set to true to verify the AWS KMS host's IP address.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "access_key_id": "<id_value>",
  "amazon_reachability": {
    "code": "346758",
    "message": "Amazon KMS is not reachable from all nodes - <reason>."
  },
```

```
  "default_domain": "domainName",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "encryption_context": "aws:fsx:fs-id=fs-0785c8beceb895999",
  "host": "aws-host.host.com",
  "polling_period": 55,
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_password": "awskze-Jwjje2-WJJPer",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "region": "us-east-1",
  "scope": "string",
  "secret_access_key": "<id_value>",
  "service": "dynamodb.*.amazonaws.com",
  "skip_verify": "",
  "state": {
    "code": "346758",
    "message": "AWS KMS key protection is unavailable on the following
nodes: node1, node2."
  },
  "timeout": 20,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "verify": "",
  "verify_host": 1,
  "verify_ip": ""
}
====

== Response
```


Status: 200, Ok

```
== Response
```

Status: 202, Accepted

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537541
| No inputs provided for the REST API PATCH request.

| 65537906
| Failed to store the secret access key.

| 65537920
| Secret access key cannot be empty.

| 65537921
| Unable to connect to the Amazon Web Service Key Management Service
(AWSKMS) using these credentials.

| 65537924
| Access key ID cannot be empty.

| 65537926
| Amazon Web Service Key Management Service is not configured for SVM.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#amazon_reachability]
[.api-collapsible-fifth-title]
amazon_reachability

Indicates whether or not the Amazon KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if Amazon KMS is
reachable from all nodes in the cluster.


|message
|string
a|Error message returned when 'reachable' is false.


|reachable
```

```
|boolean
a|Set to true if the Amazon KMS is reachable from all nodes of the
cluster.


|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when AWS KMS key protection is available on all nodes of the
cluster.
```

```
|code
|string
a|Code corresponding to the message. Returns a 0 if AWS KMS key protection
is available on all nodes of the cluster.


|message
|string
a|Error message set when cluster_state is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#aws_kms]
[.api-collapsible-fifth-title]
aws_kms

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|access_key_id
|string
a|AWS Access Key ID of the user that has appropriate access to AWS KMS.


|amazon_reachability
|link:#amazon_reachability[amazon_reachability]
a|Indicates whether or not the Amazon KMS is reachable from all nodes in
the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|default_domain
|string
a|AWS KMS default domain.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|encryption_context
|string
a|Additional layer of authentication and logging.


|host
|string
a|AWS KMS host's hostname.


|polling_period
|integer
a|Polling period in minutes.
```

```
|port
|integer
a|AWS KMS port.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Proxy type.


|proxy_username
|string
a|Proxy username.


|region
|string
a|AWS region of the AWS KMS.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|secret_access_key
|string
a|AWS Secret Access Key for the provided access key ID.
```

```
|service
|string
a|AWS service type.


|skip_verify
|boolean
a|Set to true to bypass verification of the user provided access_key_id
and secret_access_key. An error will be returned if 'skip_verify' is
provided but 'access_key_id' is not.


|state
|link:#state[state]
a|Indicates whether or not the Amazon Web Services Key Management Service
(AWS KMS) key protection is available cluster-wide.


|timeout
|integer
a|AWS Connection timeout, in seconds.


|uuid
|string
a|A unique identifier for the AWS KMS.


|verify
|boolean
a|Set to true to verify the AWS KMS host.


|verify_host
|boolean
a|Set to true to verify the AWS KMS host's hostname.


|verify_ip
|boolean
a|Set to true to verify the AWS KMS host's IP address.


|===


[#error_arguments]
```

```
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage Azure Key Vaults

:leveloffset: +1


[[ID8d451aedbee85373df4aa8181df4f904]]
= Security azure-key-vaults endpoint overview



== Overview

Azure Key Vault (AKV) is a cloud key management service (KMS) that
provides a secure store for secrets. This feature
allows ONTAP to securely store its encryption keys using AKV.
In order to use AKV with ONTAP, you must first deploy an Azure application
with the appropriate access to an AKV and then provide
ONTAP with the necessary details, such as key vault name, application ID
so that ONTAP can communicate with the deployed Azure application.
The properties "state", "azure_reachability" and "ekmip_reachability" are
considered advanced properties and are populated only when explicitly
requested.

== Examples

=== Enabling an AKV configuration for an SVM using the certificate
authentication method

The example AKV configuration is enabled for a specific SVM. Note the
_return_records=true_ query parameter is used to obtain the newly created
key-manager keystore configuration.
```

```
----

# The API:
POST /api/security/azure-key-vaults

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/azure-key-
vaults?return_records=true' -H 'accept: application/hal+json' -d "{
\"svm\": { \"uuid\": \"4f7abf4c-9a07-11ea-8d52-005056bbeba5\" },
\"client_id\": \"client1\", \"tenant_id\": \"tenant1\", \"name\":
\"https:://mykeyvault.azure.vault.net/\", \"key_id\": \"https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74\",
\"client_certificate\" :
\"MIIQKQIBAzCCD+8GCSqGSIb3DQEHAaCCD+AEgg/cMIIP2DCCBg8GCSqGSIb3DQEHBqCCBgAw
ggX8AgEAMIIF9QYJKoZIhvcNAQcBMBwGCiqGSIb3DQEMAQYwDgQIWkY7ojViJDYCAggAgIIFyJ
PjIfmM6yTCKVw5ep2oZLwwvRca8pKhISVjw+WjWngh/f6Py/Ty0CwCjDFUZPsUUdSmk78E7SAz
0CpQyBwmUuFJQShjZjftHLKRWld3O4sJKB8DzH9Yw1C7En94cyJ1rT4WYoVFmeJcmOXx6h+NFH
c7njtXVsKwxc5BF88K3+3kHdV3WyVdXoeXe7yY/+EjFfjtBryp8ljuielX/NFlh5kowhoj+yxn
O0c1/0OI1iV3mTIOTXD8qrZVp9ZhAxSTRBd5uDyWMfppqxW2L+9vCUU+ZgmRxtU3VsRLOp/T14
0OP7Sn1Ch2OE0bIrbYYtcpi04QcUtfEJBMlbbTbJPHDAtiO2KIQKviZL4QMZgho9NNgL4MUpIb
NSzDCbuIC+nNMXfgfs0nPZewY+b43H/tMmnZ8Q4kiCFwrUqbFbflBiPMOaJsS0eQaJhDmzM90Q
EgbesHWgPreAcfMUcN1+BaqHFLHUxLXDxQix6zYiCAtDX6/EKlirRh1TFpmFX2PBd+X6uODhmw
m4ub9RKj3In8t5qgtN4q/mTBXjAVDAbTIIEgobBRaXGSSXCBc9W/jRed0DRZD9Bm8T/nV39sZN
ducwZa5ojYTX8fFMA0cfY6IFivXHjB00coHEEGdgCfC0G8vACqLbb+2NuhMJPtR7Ig50iAPUMc
670Z5ItOTQhyYOZ/KagOtvV8sKPCzeAkcMoHlsml89V79zt1fCJQTVWnaGiMj5Orcbskk6vCxh
DGeU6q1kgvXJKXOYRF8/wIpv8Y7/rEpnGwE/I0ZOXzdIDHXqA53B1zyOVem25ezWCD+kpoH89X
JssYlNjIMJhjVRED61w/DbSXg2yFu/v3ckGapVvTuyAiz5hWUNfl3pt++da6GoekKnLqtL4G/R
GXCnebLbXg838dlTGBznoCwGTVxXDeVYafz8AjI10qYtTMcbN56ya9kK7IHSkrnFX24xQRQOfm
D0Vob71pjdz8r1aXKvD/1X2TkYJHoeEHq0nWpU8vwDG/xhv4YgKJGN9qsEZgiTXETUh5gak8e1
tGNkP+fum+1OqlO5oS+SwNa5/eB8eFeJl2Oi48Xi5UapaTRHPFp6kZfPXOu9cEjhILowRIi6gl
g7FUbmoJcu5OvDIyP9JlyQklw2VtgNlm1QOIvzRenXmy18XnP50NTxx2cIwby8tIcdSn2C2qhj
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LdaSMGTNUZ3hEDQeomakQMfvCgypbOLxrTTqfbenHRtN+iFNYW0zCUW6EJoAXp+lqFnwQL52Il
2QxwZikE01P2k0GharzAJkXnNaFGnmHIIP6wJrCCSDZwDmr7GI2R5evDlRi17QUg2sulxQV0U8
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NoB5Ru/ApDxpYpFLk0fH9k9OnEWK5Im33puOQKLno1uwrOmdbG8+x1EY8wc9FvkHGH0Zh4Hydi
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BIIJrjCCCaowggmmBgsqhkiG9w0BDAoBAqCCCW4wgglqMBwGCiqGSIb3DQEMAQMwDgQIEjm88b
1+pnkCAggABIIJSDD3P+vnllSo1mQvmYgZVfV37T3KpurJvMxQScPvalWiF7Q1Iwasf/+N0hKK
Nr2j/aGZLunLkaG6mLPeBP2l2LCwnUxDu5kYffVVE90WX/bXewbYQribwFNkNhUrSgen8BfhnR
```

lvDrzbBLoHIvDrUFszSVBCYh31Vwgu8p9SjC8K/XlumcLdjSFko85XpoK23euhowjWH+X0kRoY
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8TElMCMGCSqGSIb3DQEJFTEWBBRymjnjEbJmrRwh4sRnwudfSQP6KDAxMCEwCQYFKw4DAhoFAA
QU+YFhgKEYjfXN/cL70yRrJSHFgUwECHeCTQnUEU0BAgIIAA==\" }"

```
# The response:
{
```

```
"num_records": 1,
"records": [
  {
    "uuid": "024cd3cf-9a08-11ea-8d52-005056bbeba5",
    "svm": {
      "uuid": "4f7abf4c-9a07-11ea-8d52-005056bbeba5",
      "name": "vs0"
    },
    "client_id": "client1",
    "tenant_id": "tenant1",
    "name": "https:://mykeyvault.azure.vault.net/",
    "key_id": "https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74",
    "_links": {
      "self": {
        "href": "/api/security/azure-key-vaults/024cd3cf-9a08-11ea-8d52-
005056bbeba5"
      }
    }
  }
]
}
----

'''

=== Creating an inactive AKV configuration for an SVM using the client
secret authentication method

The example AKV configuration is created for a specific SVM but is not
enabled.
Note the _create_inactive=true_ parameter that is used to indicate that
the configuration should be created but not enabled.
Note the _return_records=true_ query parameter is used to obtain the newly
created key-manager keystore configuration.

----

# The API:
POST /api/security/azure-key-vaults

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/azure-key-
vaults?create_inactive=true&return_records=true' -H 'accept:
application/hal+json' -d "{ \"svm\": { \"uuid\": \"4f7abf4c-9a07-11ea-
8d52-005056bbeba5\" }, \"configuration\": {\"name\": \"myConfiguration\"},
```

```
\"client_id\": \"client1\", \"tenant_id\": \"tenant1\", \"name\":
\"https:://mykeyvault.azure.vault.net/\", \"key_id\": \"https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74\",
\"client_secret\" : \"myclientPwd\" }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
    "configuration": {"name": "myConfiguration"},
    "client_id": "client1",
    "tenant_id": "tenant1",
    "name": "https:://mykeyvault.azure.vault.net/",
    "key_id": "https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74",
    "_links": {
      "self": {
        "href": "/api/security/azure-key-vaults/85619643-9a06-11ea-8d52-
005056bbeba5"
      }
    }
  }
]
}
----

'''

=== Retrieving the AKVs configured for all clusters and SVMs

The following example shows how to retrieve all configured AKVs along with
their configurations.

----

# The API:
GET /api/security/azure-key-vaults

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/azure-key-vaults?fields=*'

# The response:
{
"records": [
```

```
  {
    "configuration": {
      "uuid": "024cd3cf-9a08-11ea-8d52-005056bbeba5",
      "name" : "default"
    },
    "uuid": "024cd3cf-9a08-11ea-8d52-005056bbeba5",
    "scope": "svm",
    "svm": {
      "uuid": "4f7abf4c-9a07-11ea-8d52-005056bbeba5",
      "name": "vs0"
    },
    "client_id": "client1",
    "tenant_id": "tenant1",
    "name": "https:://mykeyvault.azure.vault.net/",
    "key_id": "https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74",
    "authentication_method": "client_secret",
    "enabled": true,
    "_links": {
      "self": {
        "href": "/api/security/azure-key-vaults/024cd3cf-9a08-11ea-8d52-
005056bbeba5"
      }
    }
  },
  {
    "configuration": {
      "uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
      "name" : "new-config"
    },
    "uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
    "scope": "cluster",
    "client_id": "client1",
    "tenant_id": "tenant1",
    "name": "https:://mykeyvault.azure.vault.net/",
    "key_id": "https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74",
    "authentication_method": "certificate",
    "enabled": false,
    "_links": {
      "self": {
        "href": "/api/security/azure-key-vaults/85619643-9a06-11ea-8d52-
005056bbeba5"
      }
    }
  }
```

```
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/security/azure-key-vaults?fields=*"
  }
}
}
----

'''

=== Retrieving a specific AKV configuration

The following example retrieves a specific AKV configuration.

----

# The API:
GET /api/security/azure-key-vaults

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5?fields=*'

# The response:
{
"configuration": {
  "uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
  "name" : "default"
},
"uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
"scope": "cluster",
"client_id": "client1",
"tenant_id": "tenant1",
"name": "https:://mykeyvault.azure.vault.net/",
"key_id": "https://keyvault-
test.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74",
"authentication_method": "client_secret",
"enabled": true,
"_links": {
  "self": {
    "href": "/api/security/azure-key-vaults/85619643-9a06-11ea-8d52-
005056bbeba5"
  }
}
```

```
}
----

'''

=== Retrieving the advanced properties of a specific, enabled AKV
configuration

The following example retrieves the advanced properties of a specific
enabled AKV configuration (inactive AKV configurations do not have these
advanced properties).

----

# The API:
GET /api/security/azure-key-vaults

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-
005056bbeba5?fields=state,azure_reachability,ekmip_reachability"'
{
"configuration": {
  "uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
  "name" : "default"
},
"uuid": "85619643-9a06-11ea-8d52-005056bbeba5",
"name": "https://10.234.237.18",
"state": {
  "cluster_state": true,
  "message": "",
  "code": "0"
},
"azure_reachability": {
  "reachable": true,
  "message": "",
  "code": "0"
},
"ekmip_reachability": [
  {
    "node": {
        "uuid": "d208115f-7721-11eb-bf83-005056bb150e",
        "name": "node1",
        "_links": {
            "self": {
            "href": "/api/cluster/nodes/d208115f-7721-11eb-bf83-
```

```
005056bb150e"
            }
        }
    },
    "reachable": true,
    "message": "",
    "code": "0"
  },
  {
    "node": {
        "uuid": "e208115f-7721-11eb-bf83-005056bb150e",
        "name": "node2",
        "_links": {
            "self": {
            "href": "/api/cluster/nodes/e208115f-7721-11eb-bf83-
005056bb150e"
            }
        }
    },
    "reachable": true,
    "message": "",
    "code": "0"
  }
],
"_links": {
  "self": {
    "href": "/api/security/azure-key-vaults/85619643-9a06-11ea-8d52-
005056bbeba5"
  }
}
}
----

'''

=== Updating the client secret of a specific AKV configuration

The following example updates the client secret of a specific AKV
configuration.

----

# The API:
PATCH /api/security/azure-key-vaults

# The call:
```

```
curl -X PATCH 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5' -d "{ \"client_secret\": \"newSecret\" }"
----

'''

=== Updating the client certificate and key of a specific AKV
configuration

The following example updates the client certificate and key of a
configured AKV for a specific AKV configuration.

----

# The API:
PATCH /api/security/azure-key-vaults

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5' -d "{ \"client_certificate\":
\"MIIQKQIBAzCCD+8GCSqGSIb3DQEHAaCCD+AEgg/cMIIP2DCCBg8GCSqGSIb3DQEHBqCCBgAw
ggX8AgEAMIIF9QYJKoZIhvcNAQcBMBwGCiqGSIb3DQEMAQYwDgQIWkY7ojViJDYCAggAgIIFyJ
PjIfmM6yTCKVw5ep2oZLwwvRca8pKhISVjw+WjWngh/f6Py/Ty0CwCjDFUZPsUUdSmk78E7SAz
0CpQyBwmUuFJQShjZjftHLKRWld3O4sJKB8DzH9Yw1C7En94cyJ1rT4WYoVFmeJcmOXx6h+NFH
c7njtXVsKwxc5BF88K3+3kHdV3WyVdXoeXe7yY/+EjFfjtBryp8ljuielX/NFlh5kowhoj+yxn
O0c1/0OI1iV3mTIOTXD8qrZVp9ZhAxSTRBd5uDyWMfppqxW2L+9vCUU+ZgmRxtU3VsRLOp/T14
0OP7Sn1Ch2OE0bIrbYYtcpi04QcUtfEJBMlbbTbJPHDAtiO2KIQKviZL4QMZgho9NNgL4MUpIb
NSzDCbuIC+nNMXfgfs0nPZewY+b43H/tMmnZ8Q4kiCFwrUqbFbflBiPMOaJsS0eQaJhDmzM90Q
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m4ub9RKj3In8t5qgtN4q/mTBXjAVDAbTIIEgobBRaXGSSXCBc9W/jRed0DRZD9Bm8T/nV39sZN
ducwZa5ojYTX8fFMA0cfY6IFivXHjB00coHEEGdgCfC0G8vACqLbb+2NuhMJPtR7Ig50iAPUMc
670Z5ItOTQhyYOZ/KagOtvV8sKPCzeAkcMoHlsml89V79zt1fCJQTVWnaGiMj5Orcbskk6vCxh
DGeU6q1kgvXJKXOYRF8/wIpv8Y7/rEpnGwE/I0ZOXzdIDHXqA53B1zyOVem25ezWCD+kpoH89X
JssYlNjIMJhjVRED61w/DbSXg2yFu/v3ckGapVvTuyAiz5hWUNfl3pt++da6GoekKnLqtL4G/R
GXCnebLbXg838dlTGBznoCwGTVxXDeVYafz8AjI10qYtTMcbN56ya9kK7IHSkrnFX24xQRQOfm
D0Vob71pjdz8r1aXKvD/1X2TkYJHoeEHq0nWpU8vwDG/xhv4YgKJGN9qsEZgiTXETUh5gak8e1
tGNkP+fum+1OqlO5oS+SwNa5/eB8eFeJl2Oi48Xi5UapaTRHPFp6kZfPXOu9cEjhILowRIi6gl
g7FUbmoJcu5OvDIyP9JlyQklw2VtgNlm1QOIvzRenXmy18XnP50NTxx2cIwby8tIcdSn2C2qhj
8Gk7q8oxVZGiBgtz4BwyzyKkypwm60BBRrHpAKLw6JM5RISeZnYQfIsId0tGgb61go0RJf0sFt
buvZcSvLI+2Onj8KH1TlmMR4dbuCWE9Ym4sVRmD1D6/f6BoNH0DRg7TJkEFbOadJsNPGzHbKte
LdaSMGTNUZ3hEDQeomakQMfvCgypbOLxrTTqfbenHRtN+iFNYW0zCUW6EJoAXp+lqFnwQL52Il
2QxwZikE01P2k0GharzAJkXnNaFGnmHIIP6wJrCCSDZwDmr7GI2R5evDlRi17QUg2sulxQV0U8
zezzwIUgEe/Whf0ngGJv/QcsL2jyri/tSQbUWs4g+yep4SlE3iddhfqSJzI2iKdAE+HLiHGVO1
z70fGEsO6dPLnmh4eoWidgZi9N/SoBy1aT0JpIQ6z6N5ImPfDWu9Y6TWXUg1iyOIXGsxIQVIgU
NoB5Ru/ApDxpYpFLk0fH9k9OnEWK5Im33puOQKLno1uwrOmdbG8+x1EY8wc9FvkHGH0Zh4Hydi
CVUcYSdiGWUxVmgm4OgyiYzcpB+Ar2dzikGc4pBg8fa1a1HN5Q3TK3w4h/HeOUlmA4vWOYuVO1
```

H93ILGP6PWfkug+1Tam6+8yD0W5meiZ0UIZR8TF/9gDb4+4wTFnPwgfTrggEauA8tt8uJtiyBC
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PsnByb2zCeK13V26Crl84U9sDuqQTJRaIse01MN9AAjpa2QWEwggnBBgkqhkiG9w0BBwGgggmy
BIIJrjCCCaowggmmBgsqhkiG9w0BDAoBAqCCCW4wgglqMBwGCiqGSIb3DQEMAQMwDgQIEjm88b
1+pnkCAggABIIJSDD3P+vnllSo1mQvmYgZVfV37T3KpurJvMxQScPvalWiF7Q1Iwasf/+N0hKK
Nr2j/aGZLunLkaG6mLPeBP2l2LCwnUxDu5kYffVVE90WX/bXewbYQribwFNkNhUrSgen8BfhnR
lvDrzbBLoHIvDrUFszSVBCYh31Vwgu8p9SjC8K/XlumcLdjSFko85XpoK23euhowjWH+X0kRoY
GzorcdNE8z03BKvfR61W2XWzTSaWQ6eZHGs6Urnx5Fe/w50U9tMIi3BCCCqgapUHVdmHqKkmWL
ikX8LssUcN30JVekM2aJ9v4YO6CoegKAMVDs0tVSOv3KbGC3GNX6lgHu4y1LOZPlPLfPXb0wDH
qavlxK3zpHl8sIRzuX3HXSdEdenHYAkSV/IQZ89h+CZUkf0nu/og8eoA8ATDA5g7fj3HXpQ6cY
drUBaHc7ruxHOiWR0GcT4XK4TTz7zZTO1wWPViprUo6ayw0dYZSG22MeDA027YirM044Ifosn9
CsqnNLZoOWvA2ao4ippDoBRqv5Hv6n0I3fOAys5nPq3jJtKQ5neqUYo0MrAkoKHo0h6zn0Bfvi
syB88aM9N0mPD76ykbAERq7151biKbA2tk8bb9dy/sJmk2ojM/D/W1YtrNL4iM6azL2kVN5eiC
hxCof33/RuRpXfGR8YNeJTl7bq42wL70QKDBRoG1TPcLqdVqz74oshlRspfqvZsbsUatbASBt2
T0YG4zfgfGh7sb2ezyougVvzdp77wAJ6n39dc/ZLDdYDzFkQb07984y8LlhIM1AcwFcMh43gWp
6A8CJ02l74ednirSqSVOPZ7K9dRw6Y0X8MB4/WGzEcvFeHYIGLBcXi1sBY5wjWnbeuh1wLiSkM
DQRB6oGOvF7bJsilkx5PwgWbbqw8KUSuU01skbMAa5T8Hkm4OiSTf2a78E0zIKLGZg7yu9FDII
tWYWOkG96MXEBAdOuH+wWYmaEexh51ONrfFwKDuDMZh7MO20TTEQU8oQdjRRoAofXvTcj22GSM
TY6XleskZX2ZKxSQdD1tCtkjGRKHSTYza3zLHbBiJTIJw4z6sw9FyTTApg66UAkNtiMa1r9nqT
TNaxRWEXMEQVRLzAL2F9aqjgW65xrbYXu/J9Y/SYTcYbX2SRA/JkQ+Y8F68KOoS1pvK1p5/FcE
DvprTNDS4lf+aj3HNWuK5wOsrpBhMlb2IfluK/9QwPh9IC/RhHRfimyTPRXAf73cehNdp8DpKw
Lm+jr30vazFwICpvSbi6Etb6GXfPkKaX7ztpQBqG92m2/0g3LWfPti1zwrPHPBz8y1qQMU268D
oo8YvWtI4KGaDAFb6XQhR6t6mqoq/3IP6/g//PZVEnSyUVsPLDJlLF9fiOwTbMZnaiscKv8SGE
s//B9JkKrdsRrQRZcnnPjJnJLILblRVAZGuXpSKSYVPzYmOjUx3sSeLSiPoSOcqRIJ0X3s4ED0
92W3tR4ZXK3fnkFyrIVtRJsB3k/2smiQ6Pc1VuKHh1yTzYjXKRQcDaY3EDP9IWFtjiUfZQoZci
jMWt6YXim23m2aN2Ed8qIedikR6OjFHE4Kus/2yegTszSs5CrM7NamKWzeIeNNth/cTcmT++GD
umsGNTBAsHHSq1KYpqLi4GKLHzU7WNCQRdAcIDEvMZH/CH1mZK7bzb9z038rPf/D5WZrcK1ttd
5BjTJjj7GerS0xLkvYIklAJqurjMdWYmQtT4JAHF90/zRKqFFVpSiW074bRQ+PfaLI5C+TwoX5
lYD+R91A0qyGKIkFITa8hZFY+Up+rSuREqnpAvdAVL9/gLPF6I+5+D+sVBsGRbw2rFVRbCHdwa
TQcAVPeJJy0f/+sOs/PXoejr3siORpf8iLLYOaziGYf1EtunFcCLj8PEOznaUyouJ+lm9YKPBS
LULC/sVVy6XUArYfJfq0Ag31YXpJeWPbORxVP/VCm8d/sNjWTQXGN/IjNZaZuliXNgq5nRkPBK
wF23ZUYG4pLGpGROLup9nLSgEbpiDmN1Gq/IHSfI/8HpG/yRAoCdqUdre3yL/f9caj8RBBHRYb
bfRxtyQ9u2vsrqo1oZ7F+Mu+kjuc9BxCMvJ7JaKwvQJckAkzTo6t10t6MzwiqJ7Au+2oOJ2Ukb
/985+TFGS219fmqWfwisOfpuvSkjRj8vIDBBm9itKIS+pVpfz+Mg7kl3WmkUrgF3yjTH5/C51u
aSzK2KeEVoWPx/Ps2CX7ATo6AsETp8Na38dT6d+Dm4WM4sBieKt/yOEFhiBNkgpVKAqawKRvLW
3U73OIKC8VLFhhnU+ogGxcUq5mZXvMbNDIaU2LvtmtPPo/qL0bOYu76TKc1ZX0R6AXkeImQgRP
sdeXPPANtW3la585oZbYxUXRfEIeKmkcv3eSGnPCVesbxxd1SaIJe2j7H9MbHdjYkeFQuECnUh
Kxg63BVPl/qAEIO5+OKBzM7ctuP8apeGW1iHAueKzJXc5IeFS/3iwkfDLRkrgzBeNIL0IINo3C
oGSvn95Z8+LhNSopyqt3uB4rQksUYIwXgkfrEVYujCO0T5dSkk5j10X7WlDm4DHZVLJH+GtL6v
9A6xFJNDQfQF0hS+wlXkTkMq7pUiX+Qohf8QRJZEyU5VWo2CesR63j1MFpkB3xybpbjt8oI47X
C20GEn3uCjwMwq/3K4ibHnqi16pPPRgI/u3R9TVfvOC2e0xgllrFG6cKUfogUaXoxHqP1KKjUw
23bpd9L09LzSDdSHcoDPokWzDee0ZP/Z6VH3rdjQR71kw4VBeT8nKfLP2dGBd0tpWDQhCFK7I9
axxxthnv0v09x/J7jhyoLRt5e8lMEfrqtnMWdqjFgYVEQndthZ+9/XvfNk6f5MD8fDheMuvbNT
hduFSZEcZCLlW4GWKneVji4wdBrV3aCrzAzxy0H7y7nnkyCEvac503UDtr1bk1VJIVsYfYrN2S
2DPbp3H2E8r/n6jfBilwFyp3JTJvnRqQTcYHXDieW8Njq46JO6O6wsPwKQTKMfHGxxTRJdRe5y
vJD54xvFWw1YEJ/Q2c8cr1NNXEN32e5psfIJ7o48k6bsiyXnbHKSjK781Z5h8Hc3FbUF2U2p5J

```
qLwcD7+bknEunsbWSC37iMk7oweF3hMhKRMm9iYJ8tpxMRcWCOt7ador+Y2fYWBsu/bwXwcRI0
8TElMCMGCSqGSIb3DQEJFTEWBBRymjnjEbJmrRwh4sRnwudfSQP6KDAxMCEwCQYFKw4DAhoFAA
QU+YFhgKEYjfXN/cL70yRrJSHFgUwECHeCTQnUEU0BAgIIAA==\" }"
----

'''

=== Deleting a specific AKV configuration

The following example deletes a specific, enabled AKV.

----

# The API:
DELETE /api/security/azure-key-vaults

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5'
----

'''

=== Restoring the keys for a specific AKV configuration

The following example restores all the keys of a specific AKV
configuration.

----

# The API:
POST security/azure-key-vaults/{uuid}/restore

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5/restore'

# The response:
{
"job": {
  "uuid": "6ab6946f-9a0c-11ea-8d52-005056bbeba5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6ab6946f-9a0c-11ea-8d52-005056bbeba5"
    }
  }
}
```

```
}
----

'''

=== Rekeying the internal key for a specific AKV configuration

The following example rekeys the internal key of a specific AKV
configuration.

----

# The API:
POST security/azure-key-vaults/{uuid}/rekey-internal

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/azure-key-vaults/85619643-
9a06-11ea-8d52-005056bbeba5/rekey-internal'

# The response:
{
"job": {
  "uuid": "6ab6946f-9a0c-11ea-8d52-005056bbeba5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6ab6946f-9a0c-11ea-8d52-005056bbeba5"
    }
  }
}
}
----

'''





[[IDae4f4366918da4a0ae7716dcd38a8a57]]
= Retrieve AKVs configured for all clusters and SVMs

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/azure-key-vaults`#

*Introduced In:* 9.8

Retrieves AKVs configured for all clusters and SVMs.
```

```
== Related ONTAP commands

* `security key-manager external azure show`
* `security key-manager external azure check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|proxy_port
|integer
|query
|False
a|Filter by proxy_port


|verify_ip
|boolean
|query
|False
a|Filter by verify_ip

* Introduced in: 9.14


|skip_verification
|boolean
|query
|False
a|Filter by skip_verification

* Introduced in: 9.16


|name
|string
|query
|False
```

```
a|Filter by name


|client_id
|string
|query
|False
a|Filter by client_id


|scope
|string
|query
|False
a|Filter by scope


|azure_reachability.code
|string
|query
|False
a|Filter by azure_reachability.code


|azure_reachability.reachable
|boolean
|query
|False
a|Filter by azure_reachability.reachable


|azure_reachability.message
|string
|query
|False
a|Filter by azure_reachability.message


|proxy_host
|string
|query
|False
a|Filter by proxy_host


|svm.name
|string
```

```
|query
|False
a|Filter by svm.name


|svm.uuid
|string
|query
|False
a|Filter by svm.uuid


|enabled
|boolean
|query
|False
a|Filter by enabled

* Introduced in: 9.14


|authentication_method
|string
|query
|False
a|Filter by authentication_method

* Introduced in: 9.10


|port
|integer
|query
|False
a|Filter by port

* Introduced in: 9.14


|uuid
|string
|query
|False
a|Filter by uuid


|oauth_host
```

```
|string
|query
|False
a|Filter by oauth_host

* Introduced in: 9.14


|state.available
|boolean
|query
|False
a|Filter by state.available


|state.message
|string
|query
|False
a|Filter by state.message


|state.code
|string
|query
|False
a|Filter by state.code


|ekmip_reachability.node.uuid
|string
|query
|False
a|Filter by ekmip_reachability.node.uuid


|ekmip_reachability.node.name
|string
|query
|False
a|Filter by ekmip_reachability.node.name


|ekmip_reachability.message
|string
|query
|False
```

```
a|Filter by ekmip_reachability.message


|ekmip_reachability.reachable
|boolean
|query
|False
a|Filter by ekmip_reachability.reachable


|ekmip_reachability.code
|string
|query
|False
a|Filter by ekmip_reachability.code


|tenant_id
|string
|query
|False
a|Filter by tenant_id


|verify_host
|boolean
|query
|False
a|Filter by verify_host

* Introduced in: 9.14


|vault_host
|string
|query
|False
a|Filter by vault_host

* Introduced in: 9.14


|proxy_type
|string
|query
|False
a|Filter by proxy_type
```

```
|key_id
|string
|query
|False
a|Filter by key_id


|proxy_username
|string
|query
|False
a|Filter by proxy_username


|configuration.uuid
|string
|query
|False
a|Filter by configuration.uuid

* Introduced in: 9.14


|configuration.name
|string
|query
|False
a|Filter by configuration.name

* Introduced in: 9.14


|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.
```

```
|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
```

```
a|

|num_records
|integer
a|Number of records


|records
|array[link:#azure_key_vault[azure_key_vault]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_method": "client_secret",
      "azure_reachability": {
        "code": "346758",
        "message": "AKV service is not reachable from all nodes - reason."
      },
      "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
      "configuration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      },
      "ekmip_reachability": [
        {
          "code": "346758",
          "message": "embedded KMIP server status unavailable on node.",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "key_id":
"https://keyvault1.vault.azure.net/keys/key1/12345678901234567890123456789
012",
      "name": "https://kmip-akv-keyvault.vault.azure.net/",
      "oauth_host": "login.microsoftonline.com",
      "port": 443,
      "proxy_host": "proxy.eng.com",
      "proxy_port": 1234,
      "proxy_type": "http",
      "proxy_username": "proxyuser",
      "scope": "string",
      "skip_verification": "",
      "state": {
        "code": "346758",
        "message": "Top-level internal key protection key (KEK) is
unavailable on the following nodes with the associated reasons: Node:
node1. Reason: No volumes created yet for the SVM. Wrapped KEK status will
be available after creating encrypted volumes."
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
      },
      "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vault_host": "vault.azure.net",
      "verify_host": "",
      "verify_ip": ""
    }
  ]
}
====

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537549
| The Azure Key Vault Key Management Service is unreachable from one or
more nodes.

| 65537551
| Top-level internal key protection key (KEK) unavailable on one or more
nodes.

| 65537552
| Embedded KMIP server status not available.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
```

```
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===
```

```
[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#azure_reachability]
[.api-collapsible-fifth-title]
azure_reachability

Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
```

```
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV service is
reachable from all nodes in the cluster.


|message
|string
a|Error message set when reachability is false.


|reachable
|boolean
a|Set to true when the AKV service is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.


|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
```

```
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the AKV wrapped internal key is available cluster
wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
```

```
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|available
|boolean
a|Set to true when an AKV wrapped internal key is present on all nodes of
the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV wrapped key
is available on all nodes in the cluster.


|message
|string
a|Error message set when top-level internal key protection key (KEK)
availability on cluster is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#azure_key_vault]
[.api-collapsible-fifth-title]
azure_key_vault

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
```

```
access to an AKV.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier of AKV key encryption key.


|name
|string
a|Name of the deployed AKV that will be used by ONTAP for storing keys.

* example: https://kmip-akv-keyvault.vault.azure.net/
* format: uri
* Introduced in: 9.8
* readCreate: 1
* x-nullable: true


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.
```

```
|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|skip_verification
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
```

```
access to an AKV.


|uuid
|string
a|A unique identifier for the Azure Key Vault (AKV).


|vault_host
|string
a|AKV host subdomain.


|verify_host
|boolean
a|Verify the identity of the AKV host name.


|verify_ip
|boolean
a|Verify the identity of the AKV IP address.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===
```

```
[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID8e05fcac761d44900998f4147277db1d]]
= Create an AKV configuration for all clusters and SVMs

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/azure-key-vaults`#

*Introduced In:* 9.8
```

```
Configures the AKV configuration for all clusters and SVMs.

== Required properties:

* `svm.uuid` or `svm.name` - Existing SVM in which to create a AKV.
* `client_id` - Application (client) ID of the deployed Azure application
with appropriate access to an AKV.
* `tenant_id` - Directory (tenant) ID of the deployed Azure application
with appropriate access to an AKV.
* `client_secret` or `client_certificate` - Secret or PKCS12 Certificate
used by the application to prove its identity to AKV.
* `key_id`- Key Identifier of AKV encryption key.
* `name` - Name of the deployed AKV used by ONTAP for storing keys.

== Optional properties:

* `port` - Authorization server and vault port number.
* `oauth_host` - Open authorization server host name.
* `vault_host` - AKV host subdomain.
* `proxy_type` - Type of proxy (http, https etc.) if proxy configuration
is used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `proxy_username` - Proxy username if proxy configuration is used.
* `proxy_password` - Proxy password if proxy configuration is used.
* `configuration.name` - The configuration name to use when also setting
the `create_inactive` flag.

== Optional parameters:

* `create_inactive` - Create an AKV configuration without enabling it.
This flag is set to "false" by default.

== Related ONTAP commands

* `security key-manager external azure enable`
* `security key-manager external azure create-config`
* `security key-manager external azure update-config`


== Parameters

[cols=5*,options=header]
|===

|Name
```

```
|Type
|In
|Required
|Description

|create_inactive
|boolean
|query
|False
a|Indicates whether to create an active or inactive configuration.

* Introduced in: 9.16


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_certificate
|string
a|PKCS12 Certificate used by the application to prove its identity to AKV.


|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
access to an AKV.


|client_secret
|string
a|Secret used by the application to prove its identity to AKV.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
```

```
a|

|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier of AKV key encryption key.


|name
|string
a|Name of the deployed AKV that will be used by ONTAP for storing keys.

* example: https://kmip-akv-keyvault.vault.azure.net/
* format: uri
* Introduced in: 9.8
* readCreate: 1
* x-nullable: true


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.
```

```
|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|skip_verification
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
access to an AKV.


|uuid
|string
```

```
a|A unique identifier for the Azure Key Vault (AKV).


|vault_host
|string
a|AKV host subdomain.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "authentication_method": "client_secret",
  "azure_reachability": {
    "code": "346758",
    "message": "AKV service is not reachable from all nodes - reason."
  },
  "client_certificate":
"MIIQKQIBAzCCD+8GCSqGSIb3DQEHAaCCD+AEgg/cMIIP2DCCBg8GCSqGSIb3DQEHBqCCBgAwg
gX8AgEAMIIF9QYJKoZIhvcNAQcBMBwGCiqGSIb3DQEMAQYwDgQIWkY7ojViJDYCAggAgIIFyJP
jIfmM6yTCKVw5ep2oZLwwvRca8pKhISVjw+WjWngh/f6Py/Ty0CwCjDFUZPsUUdSmk78E7SAz0
CpQyBwmUuFJQShjZjftHLKRWld3O4sJKB8DzH9Yw1C7En94cyJ1rT4WYoVFmeJcmOXx6h+NFHc
7njtXVsKwxc5BF88K3+3kHdV3WyVdXoeXe7yY/+EjFfjtBryp8ljuielX/NFlh5kowhoj+yxnO
0c1/0OI1iV3mTIOTXD8qrZVp9ZhAxSTRBd5uDyWMfppqxW2L+9vCUU+ZgmRxtU3VsRLOp/T140
OP7Sn1Ch2OE0bIrbYYtcpi04QcUtfEJBMlbbTbJPHDAtiO2KIQKviZL4QMZgho9NNgL4MUpIbN
SzDCbuIC+nNMXfgfs0nPZewY+b43H/tMmnZ8Q4kiCFwrUqbFbflBiPMOaJsS0eQaJhDmzM90QE
gbesHWgPreAcfMUcN1+BaqHFLHUxLXDxQix6zYiCAtDX6/EKlirRh1TFpmFX2PBd+X6uODhmwm
4ub9RKj3In8t5qgtN4q/mTBXjAVDAbTIIEgobBRaXGSSXCBc9W/jRed0DRZD9Bm8T/nV39sZNd
ucwZa5ojYTX8fFMA0cfY6IFivXHjB00coHEEGdgCfC0G8vACqLbb+2NuhMJPtR7Ig50iAPUMc6
70Z5ItOTQhyYOZ/KagOtvV8sKPCzeAkcMoHlsml89V79zt1fCJQTVWnaGiMj5Orcbskk6vCxhD
GeU6q1kgvXJKXOYRF8/wIpv8Y7/rEpnGwE/I0ZOXzdIDHXqA53B1zyOVem25ezWCD+kpoH89XJ
ssYlNjIMJhjVRED61w/DbSXg2yFu/v3ckGapVvTuyAiz5hWUNfl3pt++da6GoekKnLqtL4G/RG
XCnebLbXg838dlTGBznoCwGTVxXDeVYafz8AjI10qYtTMcbN56ya9kK7IHSkrnFX24xQRQOfmD
0Vob71pjdz8r1aXKvD/1X2TkYJHoeEHq0nWpU8vwDG/xhv4YgKJGN9qsEZgiTXETUh5gak8e1t
GNkP+fum+1OqlO5oS+SwNa5/eB8eFeJl2Oi48Xi5UapaTRHPFp6kZfPXOu9cEjhILowRIi6glg
7FUbmoJcu5OvDIyP9JlyQklw2VtgNlm1QOIvzRenXmy18XnP50NTxx2cIwby8tIcdSn2C2qhj8
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QxwZikE01P2k0GharzAJkXnNaFGnmHIIP6wJrCCSDZwDmr7GI2R5evDlRi17QUg2sulxQV0U8z
ezzwIUgEe/Whf0ngGJv/QcsL2jyri/tSQbUWs4g+yep4SlE3iddhfqSJzI2iKdAE+HLiHGVO1z
70fGEsO6dPLnmh4eoWidgZi9N/SoBy1aT0JpIQ6z6N5ImPfDWu9Y6TWXUg1iyOIXGsxIQVIgUN
```

oB5Ru/ApDxpYpFLk0fH9k9OnEWK5Im33puOQKLno1uwrOmdbG8+x1EY8wc9FvkHGH0Zh4HydiC
VUcYSdiGWUxVmgm4OgyiYzcpB+Ar2dzikGc4pBg8fa1a1HN5Q3TK3w4h/HeOUlmA4vWOYuVO1H
93ILGP6PWfkug+1Tam6+8yD0W5meiZ0UIZR8TF/9gDb4+4wTFnPwgfTrggEauA8tt8uJtiyBCr
YexgZTXIZGTUj/86KXQaJKCreRr/kqwJOWqkNW4CGUVzw7LiI+sArOZqUp/TsxnbNC73XCMNlP
snByb2zCeK13V26Crl84U9sDuqQTJRaIse01MN9AAjpa2QWEwggnBBgkqhkiG9w0BBwGgggmyB
IIJrjCCCaowggmmBgsqhkiG9w0BDAoBAqCCCW4wgglqMBwGCiqGSIb3DQEMAQMwDgQIEjm88b1
+pnkCAggABIIJSDD3P+vnllSo1mQvmYgZVfV37T3KpurJvMxQScPvalWiF7Q1Iwasf/+N0hKKN
r2j/aGZLunLkaG6mLPeBP2l2LCwnUxDu5kYffVVE90WX/bXewbYQribwFNkNhUrSgen8BfhnRl
vDrzbBLoHIvDrUFszSVBCYh31Vwgu8p9SjC8K/XlumcLdjSFko85XpoK23euhowjWH+X0kRoYG
zorcdNE8z03BKvfR61W2XWzTSaWQ6eZHGs6Urnx5Fe/w50U9tMIi3BCCCqgapUHVdmHqKkmWLi
kX8LssUcN30JVekM2aJ9v4YO6CoegKAMVDs0tVSOv3KbGC3GNX6lgHu4y1LOZPlPLfPXb0wDHq
avlxK3zpHl8sIRzuX3HXSdEdenHYAkSV/IQZ89h+CZUkf0nu/og8eoA8ATDA5g7fj3HXpQ6cYd
rUBaHc7ruxHOiWR0GcT4XK4TTz7zZTO1wWPViprUo6ayw0dYZSG22MeDA027YirM044Ifosn9C
sqnNLZoOWvA2ao4ippDoBRqv5Hv6n0I3fOAys5nPq3jJtKQ5neqUYo0MrAkoKHo0h6zn0Bfvis
yB88aM9N0mPD76ykbAERq7151biKbA2tk8bb9dy/sJmk2ojM/D/W1YtrNL4iM6azL2kVN5eiCh
xCof33/RuRpXfGR8YNeJTl7bq42wL70QKDBRoG1TPcLqdVqz74oshlRspfqvZsbsUatbASBt2T
0YG4zfgfGh7sb2ezyougVvzdp77wAJ6n39dc/ZLDdYDzFkQb07984y8LlhIM1AcwFcMh43gWp6
A8CJ02l74ednirSqSVOPZ7K9dRw6Y0X8MB4/WGzEcvFeHYIGLBcXi1sBY5wjWnbeuh1wLiSkMD
QRB6oGOvF7bJsilkx5PwgWbbqw8KUSuU01skbMAa5T8Hkm4OiSTf2a78E0zIKLGZg7yu9FDIIt
WYWOkG96MXEBAdOuH+wWYmaEexh51ONrfFwKDuDMZh7MO20TTEQU8oQdjRRoAofXvTcj22GSMT
Y6XleskZX2ZKxSQdD1tCtkjGRKHSTYza3zLHbBiJTIJw4z6sw9FyTTApg66UAkNtiMa1r9nqTT
NaxRWEXMEQVRLzAL2F9aqjgW65xrbYXu/J9Y/SYTcYbX2SRA/JkQ+Y8F68KOoS1pvK1p5/FcED
vprTNDS4lf+aj3HNWuK5wOsrpBhMlb2IfluK/9QwPh9IC/RhHRfimyTPRXAf73cehNdp8DpKwL
m+jr30vazFwICpvSbi6Etb6GXfPkKaX7ztpQBqG92m2/0g3LWfPti1zwrPHPBz8y1qQMU268Do
o8YvWtI4KGaDAFb6XQhR6t6mqoq/3IP6/g//PZVEnSyUVsPLDJlLF9fiOwTbMZnaiscKv8SGEs
//B9JkKrdsRrQRZcnnPjJnJLILblRVAZGuXpSKSYVPzYmOjUx3sSeLSiPoSOcqRIJ0X3s4ED09
2W3tR4ZXK3fnkFyrIVtRJsB3k/2smiQ6Pc1VuKHh1yTzYjXKRQcDaY3EDP9IWFtjiUfZQoZcij
MWt6YXim23m2aN2Ed8qIedikR6OjFHE4Kus/2yegTszSs5CrM7NamKWzeIeNNth/cTcmT++GDu
msGNTBAsHHSq1KYpqLi4GKLHzU7WNCQRdAcIDEvMZH/CH1mZK7bzb9z038rPf/D5WZrcK1ttd5
BjTJjj7GerS0xLkvYIklAJqurjMdWYmQtT4JAHF90/zRKqFFVpSiW074bRQ+PfaLI5C+TwoX5l
YD+R91A0qyGKIkFITa8hZFY+Up+rSuREqnpAvdAVL9/gLPF6I+5+D+sVBsGRbw2rFVRbCHdwaT
QcAVPeJJy0f/+sOs/PXoejr3siORpf8iLLYOaziGYf1EtunFcCLj8PEOznaUyouJ+lm9YKPBSL
ULC/sVVy6XUArYfJfq0Ag31YXpJeWPbORxVP/VCm8d/sNjWTQXGN/IjNZaZuliXNgq5nRkPBKw
F23ZUYG4pLGpGROLup9nLSgEbpiDmN1Gq/IHSfI/8HpG/yRAoCdqUdre3yL/f9caj8RBBHRYbb
fRxtyQ9u2vsrqo1oZ7F+Mu+kjuc9BxCMvJ7JaKwvQJckAkzTo6t10t6MzwiqJ7Au+2oOJ2Ukb/
985+TFGS219fmqWfwisOfpuvSkjRj8vIDBBm9itKIS+pVpfz+Mg7kl3WmkUrgF3yjTH5/C51ua
SzK2KeEVoWPx/Ps2CX7ATo6AsETp8Na38dT6d+Dm4WM4sBieKt/yOEFhiBNkgpVKAqawKRvLW3
U73OIKC8VLFhhnU+ogGxcUq5mZXvMbNDIaU2LvtmtPPo/qL0bOYu76TKc1ZX0R6AXkeImQgRPs
deXPPANtW3la585oZbYxUXRfEIeKmkcv3eSGnPCVesbxxd1SaIJe2j7H9MbHdjYkeFQuECnUhK
xg63BVPl/qAEIO5+OKBzM7ctuP8apeGW1iHAueKzJXc5IeFS/3iwkfDLRkrgzBeNIL0IINo3Co
GSvn95Z8+LhNSopyqt3uB4rQksUYIwXgkfrEVYujCO0T5dSkk5j10X7WlDm4DHZVLJH+GtL6v9
A6xFJNDQfQF0hS+wlXkTkMq7pUiX+Qohf8QRJZEyU5VWo2CesR63j1MFpkB3xybpbjt8oI47XC
20GEn3uCjwMwq/3K4ibHnqi16pPPRgI/u3R9TVfvOC2e0xgllrFG6cKUfogUaXoxHqP1KKjUw2
3bpd9L09LzSDdSHcoDPokWzDee0ZP/Z6VH3rdjQR71kw4VBeT8nKfLP2dGBd0tpWDQhCFK7I9a
xxxthnv0v09x/J7jhyoLRt5e8lMEfrqtnMWdqjFgYVEQndthZ+9/XvfNk6f5MD8fDheMuvbNTh
duFSZEcZCLlW4GWKneVji4wdBrV3aCrzAzxy0H7y7nnkyCEvac503UDtr1bk1VJIVsYfYrN2S2

```
DPbp3H2E8r/n6jfBilwFyp3JTJvnRqQTcYHXDieW8Njq46JO6O6wsPwKQTKMfHGxxTRJdRe5yv
JD54xvFWw1YEJ/Q2c8cr1NNXEN32e5psfIJ7o48k6bsiyXnbHKSjK781Z5h8Hc3FbUF2U2p5Jq
LwcD7+bknEunsbWSC37iMk7oweF3hMhKRMm9iYJ8tpxMRcWCOt7ador+Y2fYWBsu/bwXwcRI08
TElMCMGCSqGSIb3DQEJFTEWBBRymjnjEbJmrRwh4sRnwudfSQP6KDAxMCEwCQYFKw4DAhoFAAQ
U+YFhgKEYjfXN/cL70yRrJSHFgUwECHeCTQnUEU0BAgIIAA==",
  "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
  "client_secret": "abcdef",
  "configuration": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "key_id":
"https://keyvault1.vault.azure.net/keys/key1/12345678901234567890123456789
012",
  "name": "https://kmip-akv-keyvault.vault.azure.net/",
  "oauth_host": "login.microsoftonline.com",
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "skip_verification": "",
  "state": {
    "code": "346758",
    "message": "Top-level internal key protection key (KEK) is unavailable
on the following nodes with the associated reasons: Node: node1. Reason:
No volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
```

```
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vault_host": "vault.azure.net",
  "verify_host": "",
  "verify_ip": ""
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 3735553
| Failed to create self-signed certificate.

| 3735664
| The specified key size is not supported in FIPS mode.

| 3735665
| The specified hash function is not supported in FIPS mode.

| 3735700
| The specified key size is not supported.

| 52559972
| The certificates start date is later than the current date.

| 65537500
| A key manager has already been configured for this SVM.

| 65537504
| Internal error. Failed to store configuration in internal database.

| 65537505
| One or more volume encryption keys of the given SVM are stored on a key
manager configured for the admin SVM.

| 65537506
| AKV is not supported in MetroCluster configurations.

| 65537512
| AKV cannot be configured for the given SVM as not all nodes in the
cluster can enable the Azure Key Vault feature.

| 65537514
| Failed to check if the Azure Key Vault feature is enabled.

| 65537518
```

```
| Failed to find an interface with Cluster role.

| 65537523
| Invalid key ID format. Example key ID format":"
"https://mykeyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e
2a74".

| 65537526
| Failed to enable Azure Key Vault feature.

| 65537567
| No authentication method provided.

| 65537573
| Invalid client certificate.

| 65537589
| The specified configuration.name already exists on the given SVM.

| 65537592
| The configuration.name field requires an ECV of 9.14.0 or greater.

| 65537593
| The create_inactive flag requires an effective cluster version of 9.14.0
or greater.

| 65537594
| The configuration.name field is required when the create_inactive flag
is set to true.

| 65537595
| The configuration.name field can only be specified when the
create_inactive flag is set to true.

| 65538902
| The configuration.name is reserved for use by the system.

| 65538903
| The configuration.name field cannot be an empty string.

| 65539704
| The key manager cannot be configured because the SVM has NAE volumes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.
```

```
== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#azure_reachability]
[.api-collapsible-fifth-title]
azure_reachability

Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV service is
reachable from all nodes in the cluster.


|message
|string
a|Error message set when reachability is false.


|reachable
|boolean
a|Set to true when the AKV service is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.


|===
```

```
[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.
```

```
|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the AKV wrapped internal key is available cluster
wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|available
|boolean
a|Set to true when an AKV wrapped internal key is present on all nodes of
the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV wrapped key
```

```
is available on all nodes in the cluster.


|message
|string
a|Error message set when top-level internal key protection key (KEK)
availability on cluster is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#azure_key_vault]
[.api-collapsible-fifth-title]
azure_key_vault

[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_certificate
|string
a|PKCS12 Certificate used by the application to prove its identity to AKV.


|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
access to an AKV.


|client_secret
|string
a|Secret used by the application to prove its identity to AKV.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|
```

```
|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier of AKV key encryption key.


|name
|string
a|Name of the deployed AKV that will be used by ONTAP for storing keys.

* example: https://kmip-akv-keyvault.vault.azure.net/
* format: uri
* Introduced in: 9.8
* readCreate: 1
* x-nullable: true


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
```

```
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|skip_verification
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
access to an AKV.


|uuid
|string
a|A unique identifier for the Azure Key Vault (AKV).
```

```
|vault_host
|string
a|AKV host subdomain.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument
```

```
|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID57867143bf6785af89e85fbbad49ebd6]]
= Re-key the external key in the key hierarchy

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/azure-key-vaults/{azure_key_vault.uuid}/rekey-external`#
```

```
*Introduced In:* 9.11

Rekeys the external key in the key hierarchy for an SVM with an AKV
configuration.

== Required properties

* `key_id` - Key identifier of the new AKV key encryption key.

== Related ONTAP commands

* `security key-manager external azure rekey-external`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|azure_key_vault.uuid
|string
|path
|True
a|UUID of the existing AKV configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
```

```
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier of the AKV key encryption key.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "key_id":
"https://keyvault1.vault.azure.net/keys/key1/12345678901234567890123456789
012"
}
====

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537120
| Azure Key Vault is not configured for the given SVM.

| 65537547
| One or more volume encryption keys for encrypted volumes of this data
SVM are stored in the key manager configured for the admin SVM. Use the
REST API POST method to migrate this data SVM's keys from the admin SVM's
```

```
key manager to this data SVM's key manager before running the rekey
operation.

| 65537610
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being switched. If a previous attempt to switch the
keystore configuration failed, or was interrupted, the system will
continue to prevent rekeying for the SVM. Use the REST API PATCH method
"/api/security/key-stores/\{uuid}" to re-run and complete the operation.

| 65539436
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being initialized. Wait until the keystore is in the
active state, and rerun the rekey operation.

| 65539437
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being disabled.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#azure_key_vault_key]
[.api-collapsible-fifth-title]
azure_key_vault_key

[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier of the AKV key encryption key.
```

```
|===


[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.
```

```
|===


//end collapsible .Definitions block
====



[[ID8717e9a10158b826b3275d4992c128fb]]
= Delete an AKV configuration

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/azure-key-vaults/{uuid}`#

*Introduced In:* 9.8

Deletes an AKV configuration.

== Related ONTAP commands

* `security key-manager external azure disable`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|AKV UUID


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
```

```
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Response
```

Status: 200, Ok

```
== Response
```

Status: 202, Accepted

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536242
| One or more self-encrypting drives are assigned an authentication key.

| 65536243
| Cannot determine authentication key presence on one or more self-
encrypting drives.

| 65536817
| Internal error. Failed to determine if key manager is safe to disable.

| 65536827
| Internal error. Failed to determine if the given SVM has any encrypted
volumes.
```

```
| 65536834
| Internal error. Failed to get existing key-server details for the given
SVM.

| 65536867
| Volume encryption keys (VEK) for one or more encrypted volumes are
stored on the key manager configured for the given SVM.

| 65536883
| Internal error. Volume encryption key is missing for a volume.

| 65536884
| Internal error. Volume encryption key is invalid for a volume.

| 65536924
| Cannot remove key manager that still contains one or more NSE
authentication keys.

| 65537120
| Azure Key Vault is not configured for the given SVM.

| 196608080
| One or more nodes in the cluster have the root volume encrypted using
NVE (NetApp Volume Encryption).

| 196608301
| Internal error. Failed to get encryption type.

| 196608305
| NAE aggregates found in the cluster.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|
```

```
|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
```

```
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDbe8f886a3e92a5fe41bef0ea3b92be7a]]
= Retrieve the AKV configuration for an SVM specified by the UUID
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/azure-key-vaults/{uuid}`#

*Introduced In:* 9.8

Retrieves the AKV configuration for the SVM specified by the UUID.

== Related ONTAP commands

* `security key-manager external azure show`
* `security key-manager external azure check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|AKV UUID


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
access to an AKV.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier of AKV key encryption key.
```

```
|name
|string
a|Name of the deployed AKV that will be used by ONTAP for storing keys.

* example: https://kmip-akv-keyvault.vault.azure.net/
* format: uri
* Introduced in: 9.8
* readCreate: 1
* x-nullable: true


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".
```

```
|skip_verification
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
access to an AKV.


|uuid
|string
a|A unique identifier for the Azure Key Vault (AKV).


|vault_host
|string
a|AKV host subdomain.


|verify_host
|boolean
a|Verify the identity of the AKV host name.


|verify_ip
|boolean
```

```
a|Verify the identity of the AKV IP address.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_method": "client_secret",
  "azure_reachability": {
    "code": "346758",
    "message": "AKV service is not reachable from all nodes - reason."
  },
  "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
  "configuration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
```

```
  "key_id":
"https://keyvault1.vault.azure.net/keys/key1/12345678901234567890123456789
012",
  "name": "https://kmip-akv-keyvault.vault.azure.net/",
  "oauth_host": "login.microsoftonline.com",
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "skip_verification": "",
  "state": {
    "code": "346758",
    "message": "Top-level internal key protection key (KEK) is unavailable
on the following nodes with the associated reasons: Node: node1. Reason:
No volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vault_host": "vault.azure.net",
  "verify_host": "",
  "verify_ip": ""
}
====

== Error
```


Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description
```

```
| 65537549
| The Azure Key Vault Key Management Service is unreachable from one or
more nodes.

| 65537551
| Top-level internal key protection key (KEK) unavailable on one or more
nodes.

| 65537552
| Embedded KMIP server status not available.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
```

```
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#azure_reachability]
[.api-collapsible-fifth-title]
azure_reachability
```

```
Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV service is
reachable from all nodes in the cluster.


|message
|string
a|Error message set when reachability is false.


|reachable
|boolean
a|Set to true when the AKV service is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.


|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability
```

```
Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the AKV wrapped internal key is available cluster
```

```
wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|available
|boolean
a|Set to true when an AKV wrapped internal key is present on all nodes of
the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV wrapped key
is available on all nodes in the cluster.


|message
|string
a|Error message set when top-level internal key protection key (KEK)
availability on cluster is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDf2f0e8bf315c38994e25d5e5bd68e970]]
= Update the AKV configuration

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/azure-key-vaults/{uuid}`#

*Introduced In:* 9.8

Updates the AKV configuration.

== Optional properties

* `client_secret` or `client_certificate` - New secret or new PKCS12
certificate used to prove the application's identity to the AKV.
```

```
* `proxy_type` - Type of proxy (http, https etc.) if proxy configuration
is used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `port` - Authorization server and vault port number.
* `oauth_host` - Open authorization server host name.
* `vault_host` - AKV host subdomain.
* `verify_host` - Verify the identity of the AKV host name.
* `verify_ip ` - Verify the identity of the AKV IP address.
* `proxy_username` - Proxy username if proxy configuration is used.
* `proxy_password` - Proxy password if proxy configuration is used.
* `client_id` - Application (client) ID of the deployed Azure application
with appropriate access to an AKV.
* `tenant_id` - Directory (tenant) ID of the deployed Azure application
with appropriate access to an AKV.
* `skip_verification` - Skip the verification of the updated credentials,
set to true to bypass the verification. The default value is false.

== Related ONTAP commands

* `security key-manager external azure update-client-secret`
* `security key-manager external azure update-credentials`
* `security key-manager external azure update-config`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|AKV UUID


|return_timeout
|integer
|query
|False
```

```
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_certificate
|string
a|PKCS12 Certificate used by the application to prove its identity to AKV.
```

```
|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
access to an AKV.


|client_secret
|string
a|Secret used by the application to prove its identity to AKV.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|

|enabled
|boolean
a|Indicates whether the configuration is enabled.


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.
```

```
|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|skip_verification
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
access to an AKV.


|uuid
|string
a|A unique identifier for the Azure Key Vault (AKV).


|vault_host
|string
a|AKV host subdomain.
```

```
|verify_host
|boolean
a|Verify the identity of the AKV host name.


|verify_ip
|boolean
a|Verify the identity of the AKV IP address.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "authentication_method": "client_secret",
  "azure_reachability": {
    "code": "346758",
    "message": "AKV service is not reachable from all nodes - reason."
  },
  "client_certificate":
"MIIQKQIBAzCCD+8GCSqGSIb3DQEHAaCCD+AEgg/cMIIP2DCCBg8GCSqGSIb3DQEHBqCCBgAwg
gX8AgEAMIIF9QYJKoZIhvcNAQcBMBwGCiqGSIb3DQEMAQYwDgQIWkY7ojViJDYCAggAgIIFyJP
jIfmM6yTCKVw5ep2oZLwwvRca8pKhISVjw+WjWngh/f6Py/Ty0CwCjDFUZPsUUdSmk78E7SAz0
CpQyBwmUuFJQShjZjftHLKRWld3O4sJKB8DzH9Yw1C7En94cyJ1rT4WYoVFmeJcmOXx6h+NFHc
7njtXVsKwxc5BF88K3+3kHdV3WyVdXoeXe7yY/+EjFfjtBryp8ljuielX/NFlh5kowhoj+yxnO
0c1/0OI1iV3mTIOTXD8qrZVp9ZhAxSTRBd5uDyWMfppqxW2L+9vCUU+ZgmRxtU3VsRLOp/T140
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4ub9RKj3In8t5qgtN4q/mTBXjAVDAbTIIEgobBRaXGSSXCBc9W/jRed0DRZD9Bm8T/nV39sZNd
ucwZa5ojYTX8fFMA0cfY6IFivXHjB00coHEEGdgCfC0G8vACqLbb+2NuhMJPtR7Ig50iAPUMc6
70Z5ItOTQhyYOZ/KagOtvV8sKPCzeAkcMoHlsml89V79zt1fCJQTVWnaGiMj5Orcbskk6vCxhD
GeU6q1kgvXJKXOYRF8/wIpv8Y7/rEpnGwE/I0ZOXzdIDHXqA53B1zyOVem25ezWCD+kpoH89XJ
ssYlNjIMJhjVRED61w/DbSXg2yFu/v3ckGapVvTuyAiz5hWUNfl3pt++da6GoekKnLqtL4G/RG
XCnebLbXg838dlTGBznoCwGTVxXDeVYafz8AjI10qYtTMcbN56ya9kK7IHSkrnFX24xQRQOfmD
0Vob71pjdz8r1aXKvD/1X2TkYJHoeEHq0nWpU8vwDG/xhv4YgKJGN9qsEZgiTXETUh5gak8e1t
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```

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IIJrjCCCaowggmmBgsqhkiG9w0BDAoBAqCCCW4wgglqMBwGCiqGSIb3DQEMAQMwDgQIEjm88b1
+pnkCAggABIIJSDD3P+vnllSo1mQvmYgZVfV37T3KpurJvMxQScPvalWiF7Q1Iwasf/+N0hKKN
r2j/aGZLunLkaG6mLPeBP2l2LCwnUxDu5kYffVVE90WX/bXewbYQribwFNkNhUrSgen8BfhnRl
vDrzbBLoHIvDrUFszSVBCYh31Vwgu8p9SjC8K/XlumcLdjSFko85XpoK23euhowjWH+X0kRoYG
zorcdNE8z03BKvfR61W2XWzTSaWQ6eZHGs6Urnx5Fe/w50U9tMIi3BCCCqgapUHVdmHqKkmWLi
kX8LssUcN30JVekM2aJ9v4YO6CoegKAMVDs0tVSOv3KbGC3GNX6lgHu4y1LOZPlPLfPXb0wDHq
avlxK3zpHl8sIRzuX3HXSdEdenHYAkSV/IQZ89h+CZUkf0nu/og8eoA8ATDA5g7fj3HXpQ6cYd
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yB88aM9N0mPD76ykbAERq7151biKbA2tk8bb9dy/sJmk2ojM/D/W1YtrNL4iM6azL2kVN5eiCh
xCof33/RuRpXfGR8YNeJTl7bq42wL70QKDBRoG1TPcLqdVqz74oshlRspfqvZsbsUatbASBt2T
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NaxRWEXMEQVRLzAL2F9aqjgW65xrbYXu/J9Y/SYTcYbX2SRA/JkQ+Y8F68KOoS1pvK1p5/FcED
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//B9JkKrdsRrQRZcnnPjJnJLILblRVAZGuXpSKSYVPzYmOjUx3sSeLSiPoSOcqRIJ0X3s4ED09
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MWt6YXim23m2aN2Ed8qIedikR6OjFHE4Kus/2yegTszSs5CrM7NamKWzeIeNNth/cTcmT++GDu
msGNTBAsHHSq1KYpqLi4GKLHzU7WNCQRdAcIDEvMZH/CH1mZK7bzb9z038rPf/D5WZrcK1ttd5
BjTJjj7GerS0xLkvYIklAJqurjMdWYmQtT4JAHF90/zRKqFFVpSiW074bRQ+PfaLI5C+TwoX5l
YD+R91A0qyGKIkFITa8hZFY+Up+rSuREqnpAvdAVL9/gLPF6I+5+D+sVBsGRbw2rFVRbCHdwaT
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U73OIKC8VLFhhnU+ogGxcUq5mZXvMbNDIaU2LvtmtPPo/qL0bOYu76TKc1ZX0R6AXkeImQgRPs
deXPPANtW3la585oZbYxUXRfEIeKmkcv3eSGnPCVesbxxd1SaIJe2j7H9MbHdjYkeFQuECnUhK
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GSvn95Z8+LhNSopyqt3uB4rQksUYIwXgkfrEVYujCO0T5dSkk5j10X7WlDm4DHZVLJH+GtL6v9
A6xFJNDQfQF0hS+wlXkTkMq7pUiX+Qohf8QRJZEyU5VWo2CesR63j1MFpkB3xybpbjt8oI47XC

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TElMCMGCSqGSIb3DQEJFTEWBBRymjnjEbJmrRwh4sRnwudfSQP6KDAxMCEwCQYFKw4DAhoFAAQ
U+YFhgKEYjfXN/cL70yRrJSHFgUwECHeCTQnUEU0BAgIIAA==",
  "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
  "client_secret": "abcdef",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "oauth_host": "login.microsoftonline.com",
  "port": 443,
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "skip_verification": "",
  "state": {
    "code": "346758",
    "message": "Top-level internal key protection key (KEK) is unavailable
on the following nodes with the associated reasons: Node: node1. Reason:
No volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vault_host": "vault.azure.net",
  "verify_host": "",
  "verify_ip": ""
}
====

== Response

Status: 200, Ok

```
== Response
```

Status: 202, Accepted

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537120
| Azure Key Vault is not configured for the given SVM.

| 65537504
| Internal error. Failed to store configuration in internal database.

| 65537517
| The field "client_secret" must be specified.

| 65537540
| Invalid client secret.

| 65537541
| No inputs were provided for the patch request.

| 65537547
| One or more volume encryption keys for encrypted volumes of this data
SVM are stored in the key manager configured for the admin SVM. Use the
REST API POST method to migrate this data SVM's keys from the admin SVM's
key manager to this data SVM's key manager before running the rekey
operation.

| 65537573
| Invalid client certificate.

| 65537577
| The AKV certificate authentication method cannot be configured for the
given SVM as not all nodes in the cluster support the AKV certificate
authentication.
```

```
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#azure_reachability]
[.api-collapsible-fifth-title]
azure_reachability

Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV service is
reachable from all nodes in the cluster.


|message
|string
a|Error message set when reachability is false.


|reachable
|boolean
a|Set to true when the AKV service is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.
```

```
|===


[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|

|uuid
|string
a|

|===


[#ekmip_reachability]
[.api-collapsible-fifth-title]
ekmip_reachability

Provides the connectivity status for the given SVM on the given node to
all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
```

```
a|Code corresponding to the error message. Returns a 0 if a given SVM is
able to communicate to the EKMIP servers of all of the nodes in the
cluster.


|message
|string
a|Error message set when cluster-wide EKMIP server availability from the
given SVM and node is false.


|node
|link:#node[node]
a|

|reachable
|boolean
a|Set to true if the given SVM on the given node is able to communicate to
all EKMIP servers configured on all nodes in the cluster.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the AKV wrapped internal key is available cluster
wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|available
|boolean
a|Set to true when an AKV wrapped internal key is present on all nodes of
the cluster.
```

```
|code
|string
a|Code corresponding to the status message. Returns a 0 if AKV wrapped key
is available on all nodes in the cluster.


|message
|string
a|Error message set when top-level internal key protection key (KEK)
availability on cluster is false.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#azure_key_vault]
[.api-collapsible-fifth-title]
azure_key_vault
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_method
|string
a|Authentication method for the AKV instance.


|azure_reachability
|link:#azure_reachability[azure_reachability]
a|Indicates whether or not the AKV service is reachable from all the nodes
in the cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|client_certificate
|string
a|PKCS12 Certificate used by the application to prove its identity to AKV.


|client_id
|string
a|Application client ID of the deployed Azure application with appropriate
access to an AKV.


|client_secret
|string
a|Secret used by the application to prove its identity to AKV.


|ekmip_reachability
|array[link:#ekmip_reachability[ekmip_reachability]]
a|
```

```
|enabled
|boolean
a|Indicates whether the configuration is enabled.


|oauth_host
|string
a|Open authorization server host name.


|port
|integer
a|Authorization server and vault port number.


|proxy_host
|string
a|Proxy host.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|skip_verification
```

```
|boolean
a|Set to true to skip the verification of the updated user credentials
when updating credentials. The default value is false.


|state
|link:#state[state]
a|Indicates whether or not the AKV wrapped internal key is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|tenant_id
|string
a|Directory (tenant) ID of the deployed Azure application with appropriate
access to an AKV.


|uuid
|string
a|A unique identifier for the Azure Key Vault (AKV).


|vault_host
|string
a|AKV host subdomain.


|verify_host
|boolean
a|Verify the identity of the AKV host name.


|verify_ip
|boolean
a|Verify the identity of the AKV IP address.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
```

```
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
```

```
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDf504cb0db8d1f9a3708f3187d2e55a09]]
= Re-key the internal key in the key hierarchy for an SVM

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/azure-key-vaults/{uuid}/rekey-internal`#

*Introduced In:* 9.10

Rekeys the internal key in the key hierarchy for an SVM with an AKV
configuration.

== Related ONTAP commands

* `security key-manager external azure rekey-internal`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|UUID of the existing AKV configuration.


|return_timeout
```

```
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537120
| Azure Key Vault is not configured for the given SVM.

| 65537547
| One or more volume encryption keys for encrypted volumes of this data
SVM are stored in the key manager configured for the admin SVM. Use the
REST API POST method to migrate this data SVM's keys from the admin SVM's
```

```
key manager to this data SVM's key manager before running the rekey
operation.

| 65537559
| There are no existing internal keys for the SVM. A rekey operation is
allowed for an SVM with one or more encryption keys.

| 65537610
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being switched. If a previous attempt to switch the
keystore configuration failed, or was interrupted, the system will
continue to prevent rekeying for the SVM. Use the REST API PATCH method
"/api/security/key-stores/\{uuid}" to re-run and complete the operation.

| 65539436
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being initialized. Wait until the keystore is in the
active state, and rerun the rekey operation.

| 65539437
| Rekey cannot be performed on the SVM while the enabled keystore
configuration is being disabled.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
```

```
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument
```

```
|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID490d5b04c16da651d49563219a1c6e70]]
= Restore keys for an SVM from a configured AKV

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/azure-key-vaults/{uuid}/restore`#
```

```
*Introduced In:* 9.10

Restore the keys for an SVM from a configured AKV.

== Related ONTAP commands

* `security key-manager external azure restore`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|UUID of the existing AKV configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
```

```
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65537120
| Azure Key Vault is not configured for the given SVM.

| 65537515
| Failed to restore keys on some nodes in the cluster.

| 65537544
| Missing wrapped top-level internal key protection key (KEK) from
internal database.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
```

```
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= Manage Barbican KMS configurations

:leveloffset: +1


[[ID08c2837bc432993ee58b42ca7080fc73]]
= Security barbican-kms endpoint overview
```

```
== Overview

Barbican Key Management Services (KMS) is a key management service that
provides a secure store for encryption keys. This feature
allows ONTAP to securely protect its encryption keys using Barbican KMS.
Before you can use Barbican KMS with ONTAP, you must provide ONTAP with
the necessary details to allow ONTAP to communicate with the deployed
Barbican application.
These details include the key ID URL, Keystone authentication URL, and the
application credentials ID and secret.
The property `barbican_reachability` is considered an advanced property
and is populated only when explicitly requested.

== Examples

=== Creating an inactive Barbican configuration for an SVM

The example Barbican configuration is created for a specific SVM but is
not enabled.
Note the _return_records=true_ query parameter can be used to return the
newly created key-manager keystore configuration.

----

# The API:
POST /api/security/barbican-kms

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/barbican-kms' -H 'accept:
application/hal+json' -H 'Content-Type: application/json' -d '{ "svm": {
"name": "barbican_svm" }, "configuration": {"name": "myConfiguration"},
"application_cred_id": "app1", "application_cred_secret": "secret1",
"key_id": "https://sample.keyid.com:9311/v1/secrets/5c610a4f-ea97-44b5-
8682-f4daeafa9647/", "keystone_url":
"https://sample.keystone.com:5000/v3/auth/tokens" }'

# The response:
{
"job": {
  "uuid": "5a208fb0-fa58-11ef-8c9f-005056bbeee5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5a208fb0-fa58-11ef-8c9f-005056bbeee5"
    }
  }
}
```

```
}
----

'''

=== Listing all Barbican configurations

The following example shows how to retrieve a list of all created Barbican
configurations.

----

# The API:
GET /api/security/barbican-kms

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/barbican-kms'

# The response:
{
"records": [
  {
    "configuration": {
      "name": "myConfiguration",
      "uuid": "5a134975-fa58-11ef-8c9f-005056bbeee5"
    },
    "uuid": "5a134975-fa58-11ef-8c9f-005056bbeee5",
    "_links": {
      "self": {
        "href": "/api/security/barbican-kms/5a134975-fa58-11ef-8c9f-
005056bbeee5"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/barbican-kms"
  }
}
}
----

'''
```

```
=== Retrieving a specific Barbican configuration

The following example shows how to retrieve information for a specific
Barbican configuration.

----

# The API:
GET /api/security/barbican-kms/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/barbican-kms/5a134975-fa58-
11ef-8c9f-005056bbeee5?fields=*'

# The response:
{
"configuration": {
  "name": "myConfiguration",
  "uuid": "5a134975-fa58-11ef-8c9f-005056bbeee5"
},
"uuid": "5a134975-fa58-11ef-8c9f-005056bbeee5",
"scope": "svm",
"svm": {
  "uuid": "ec8e0954-fa10-11ef-8c9f-005056bbeee5",
  "name": "barbican_svm"
},
"key_id": "https://sample.keyid.com:9311/v1/secrets/5c610a4f-ea97-44b5-
8682-f4daeafa9647/",
"application_cred_id": "app1",
"keystone_url": "https://sample.keystone.com:5000/v3/auth/tokens",
"proxy_type": "https",
"proxy_host": "",
"proxy_port": 0,
"proxy_username": "",
"verify": true,
"verify_host": true,
"enabled": false,
"timeout": 10,
"_links": {
  "self": {
    "href": "/api/security/barbican-kms/5a134975-fa58-11ef-8c9f-
005056bbeee5"
  }
}
}
----
```

```
'''

=== Retrieving an advanced property for a specific Barbican configuration

The following example shows how to retrieve an advanced property for a
specific Barbican configuration.

----

# The API:
GET /api/security/barbican-kms/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/barbican-kms/f72098a2-e908-
11ea-bd56-005056bb4222?fields=barbican_reachability'

# The response:
{
"configuration": {
  "name": "myConfiguration",
  "uuid": "f72098a2-e908-11ea-bd56-005056bb4222"
},
"uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
"barbican_reachability": {
  "reachable": true,
  "message": "",
  "code": "0"
},
"_links": {
  "self": {
    "href": "/api/security/barbican-kms/f72098a2-e908-11ea-bd56-
005056bb4222"
  }
}
}
----

'''

=== Updating the application credentials ID and secret for a specific
Barbican configuration

The following example shows how to update the application credentials for
a specific Barbican configuration.

----
```

```
# The API:
PATCH /api/security/barbican-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/barbican-kms/f72098a2-e908-
11ea-bd56-005056bb4222/' -d '{"application_cred_id": "app345",
"application_cred_secret" : "secret"}'

# The response:
{
"job": {
  "uuid": "921ee66a-fa5a-11ef-8c9f-005056bbeee5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/921ee66a-fa5a-11ef-8c9f-005056bbeee5"
    }
  }
}
}
----

'''

=== Enabling a Barbican configuration

The newly created Barbican configuration is inactive by default. Use the
REST API PATCH method "/api/security/key-stores/\{uuid}" to enable the
configuration.

'''

=== Restoring keys

The following example shows how to restore keys for a specific Barbican
configuration.

----

# The API:
POST /api/security/barbican-kms/{uuid}/restore

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/barbican-kms/f72098a2-e908-
11ea-bd56-005056bb4222/restore'

# The response:
{
```

```
"job": {
  "uuid": "e89e7283-2c49-11f0-831c-005056bb33a5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e89e7283-2c49-11f0-831c-005056bb33a5"
    }
  }
}
}
----

'''

=== Rekey the internal key

The following example shows how to rekey the internal key based on a
specific Barbican configuration.

----

# The API:
POST /api/security/barbican-kms/{uuid}/rekey-internal

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/barbican-kms/f72098a2-e908-
11ea-bd56-005056bb4222/rekey-internal'

# The response:
{
"job": {
  "uuid": "921ee66a-fa5a-11ef-8c9f-005056bbeee5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/921ee66a-fa5a-11ef-8c9f-005056bbeee5"
    }
  }
}
}
----

'''




[[ID038e5a0ae9334481c58cb38fe0136fa1]]
```

```
= Retrieve Barbican KMS configurations for all SVMs

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/barbican-kms`#

*Introduced In:* 9.17

Retrieves Barbican KMS configurations for all SVMs.

== Related ONTAP commands

* `security key-manager external barbican show`
* `security key-manager external barbican check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|verify_host
|boolean
|query
|False
a|Filter by verify_host


|barbican_reachability.message
|string
|query
|False
a|Filter by barbican_reachability.message


|barbican_reachability.code
|string
|query
|False
a|Filter by barbican_reachability.code
```

```
|barbican_reachability.reachable
|boolean
|query
|False
a|Filter by barbican_reachability.reachable


|state.code
|string
|query
|False
a|Filter by state.code


|state.message
|string
|query
|False
a|Filter by state.message


|state.cluster_state
|boolean
|query
|False
a|Filter by state.cluster_state


|application_cred_id
|string
|query
|False
a|Filter by application_cred_id


|timeout
|integer
|query
|False
a|Filter by timeout


|configuration.uuid
|string
|query
|False
a|Filter by configuration.uuid
```

```
|configuration.name
|string
|query
|False
a|Filter by configuration.name


|key_id
|string
|query
|False
a|Filter by key_id


|proxy_username
|string
|query
|False
a|Filter by proxy_username


|verify
|boolean
|query
|False
a|Filter by verify


|proxy_type
|string
|query
|False
a|Filter by proxy_type


|scope
|string
|query
|False
a|Filter by scope


|proxy_port
|integer
|query
```

```
|False
a|Filter by proxy_port


|uuid
|string
|query
|False
a|Filter by uuid


|keystone_url
|string
|query
|False
a|Filter by keystone_url


|proxy_host
|string
|query
|False
a|Filter by proxy_host


|svm.name
|string
|query
|False
a|Filter by svm.name


|svm.uuid
|string
|query
|False
a|Filter by svm.uuid


|enabled
|boolean
|query
|False
a|Filter by enabled


|fields
```

```
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===
```

== Response

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records


|records
|array[link:#barbican[barbican]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application_cred_id": "63e3cb77f84f42b7a0395a3efb7636f9",
```

```
      "barbican_reachability": {
        "code": "346758",
        "message": "Barbican KMS is not reachable from all nodes -
<reason>.",
        "reachable": ""
      },
      "configuration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      },
      "key_id": "https://172.29.58.184:9311/v1/secrets/5c610a4f-ea97-44b5-
8682-f4daeafa9647",
      "keystone_url": "https://keystoneip:5000/v3/auth/tokens",
      "proxy_host": "proxy.eng.com",
      "proxy_port": 1234,
      "proxy_type": "http",
      "proxy_username": "proxyuser",
      "scope": "string",
      "state": {
        "cluster_state": "",
        "code": "346758",
        "message": "Top-level internal key encryption key is unavailable
on the following nodes with the associated reasons: Node: node1. Reason:
No volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "timeout": 60,
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
    }
  ]
}
====
```

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65539801
| The Barbican Key Management Service is unreachable from one or more
nodes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
```

```
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
```

```
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#barbican_reachability]
[.api-collapsible-fifth-title]
barbican_reachability

Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns 0 if Barbican KMS is
reachable from all nodes in the cluster.
```

```
|message
|string
a|Set to the appropriate error message when 'reachable' is false.


|reachable
|boolean
a|Set to true if the Barbican KMS is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.


|===


[#state]
[.api-collapsible-fifth-title]
state
```

```
Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when an SVM-KEK is present on all nodes of the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if the SVM-KEK is
available on all nodes in the cluster.


|message
|string
a|Error message returned when there's no SVM-KEK availability on the
cluster.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#barbican]
[.api-collapsible-fifth-title]
barbican

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
```

```
requested using the field's query parameter or GET for all advanced
properties is enabled.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier URL of the Barbican KMS key encryption key. Must be an
HTTPS URL.


|keystone_url
|string
a|Keystone URL for the access token. Must be an HTTPS URL.


|proxy_host
|string
a|Proxy host name.


|proxy_port
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
```

```
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|Connection timeout in seconds.


|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.
```

```
|===


//end collapsible .Definitions block
====



[[IDbd53f73e053b38b2a8aa22526782cf0b]]
= Create a Barbican KMS configuration for an SVM

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/barbican-kms`#

*Introduced In:* 9.17

Creates a Barbican KMS configuration for the specified SVM.

== Required properties

* `configuration.name` - Name for the new Barbican configuration.
* `svm.uuid` or `svm.name` - Existing SVM in which to create a Barbican
KMS.
* `key_id` - Barbican key URL.
* `keystone_url` - Keystone authentication URL.
* `application_cred_id` - Keystone authentication application ID with
access to the Barbican KMS.
* `application_cred_secret`- Application credentials secret to
authenticate the application credentials ID with Keystone.

== Optional properties

* `proxy_type` - Type of proxy (http/https) if proxy configuration is
used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `proxy_username` - Proxy username if proxy configuration is used.
* `proxy_password` - Proxy password if proxy configuration is used.
* `verify` - Verify the identity of the Barbican KMS?
* `verify_host` - Verify the identity of the Barbican KMS host name?
* `timeout` - Connection timeout in seconds.

== Related ONTAP commands

* `security key-manager external barbican create-config`
```

```
== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|application_cred_secret
|string
a|Keystone application credentials secret required to access the specified
Barbican KMS. It is not audited.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier URL of the Barbican KMS key encryption key. Must be an
HTTPS URL.


|keystone_url
```

```
|string
a|Keystone URL for the access token. Must be an HTTPS URL.


|proxy_host
|string
a|Proxy host name.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
```

```
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|Connection timeout in seconds.


|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "application_cred_id": "63e3cb77f84f42b7a0395a3efb7636f9",
  "application_cred_secret": "secret",
  "barbican_reachability": {
    "code": "346758",
    "message": "Barbican KMS is not reachable from all nodes - <reason>.",
    "reachable": ""
  },
  "configuration": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "key_id": "https://172.29.58.184:9311/v1/secrets/5c610a4f-ea97-44b5-
8682-f4daeafa9647",
  "keystone_url": "https://keystoneip:5000/v3/auth/tokens",
  "proxy_host": "proxy.eng.com",
```

```
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "state": {
    "cluster_state": "",
    "code": "346758",
    "message": "Top-level internal key encryption key is unavailable on
the following nodes with the associated reasons: Node: node1. Reason: No
volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timeout": 60,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
}
====

== Response
```


Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 1115127
| Package MT_EK_MGMT is not licensed in the cluster.

| 65539805
| Failed to create a Barbican Key Management Service configuration because
the "application-cred-secret" field is invalid or was not provided.

| 65539806
| Barbican Key Management Service (KMS) cannot be configured because not
all nodes in the cluster are running an effective cluster version of 9.17
or later to support the Barbican KMS feature.

| 65539807
| Barbican Key Management Service is not supported for the admin SVM.

| 65539808
| Failed to create the specified Barbican Key Management Service
configuration because a Barbican Key Management Service configuration with
the same name already exists.

| 65539809
| Barbican Key Management Service is not supported in MetroCluster
configurations.

| 65539810
| Failed to create a Barbican Key Management Service configuration because
the "key-id" field is invalid or was not provided. The URI scheme must be
HTTPS.

| 65539811
| Failed to create a Barbican Key Management Service configuration because
the "keystone-url" field is invalid or was not provided. The URI scheme
must be HTTPS.

| 65539835
| Failed to create a Barbican Key Management Service configuration because
```

```
the "application-cred-id" field cannot be empty.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#barbican_reachability]
[.api-collapsible-fifth-title]
barbican_reachability

Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns 0 if Barbican KMS is
reachable from all nodes in the cluster.


|message
|string
a|Set to the appropriate error message when 'reachable' is false.


|reachable
|boolean
a|Set to true if the Barbican KMS is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the configuration.


|uuid
|string
```

```
a|Keystore UUID.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when an SVM-KEK is present on all nodes of the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if the SVM-KEK is
available on all nodes in the cluster.


|message
|string
a|Error message returned when there's no SVM-KEK availability on the
cluster.


|===


[#svm]
[.api-collapsible-fifth-title]
```

```
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#barbican]
[.api-collapsible-fifth-title]
barbican

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|application_cred_secret
|string
```

```
a|Keystone application credentials secret required to access the specified
Barbican KMS. It is not audited.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier URL of the Barbican KMS key encryption key. Must be an
HTTPS URL.


|keystone_url
|string
a|Keystone URL for the access token. Must be an HTTPS URL.


|proxy_host
|string
a|Proxy host name.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
```

```
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|Connection timeout in seconds.


|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
```

```
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
```

```
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[IDa772ead17247d594cdb84f4275a7f80e]]
= Retrieve the Barbican KMS configuration for an SVM
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/barbican-kms/{uuid}`#

*Introduced In:* 9.17

Retrieves the Barbican KMS configuration for the SVM specified by the
UUID.

== Related ONTAP commands

* `security key-manager external barbican show`
* `security key-manager external barbican check`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|Barbican KMS UUID


|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


|configuration
|link:#configuration[configuration]
a|Security keystore object reference.


|enabled
|boolean
a|Indicates whether the configuration is enabled.


|key_id
|string
a|Key Identifier URL of the Barbican KMS key encryption key. Must be an
HTTPS URL.


|keystone_url
|string
a|Keystone URL for the access token. Must be an HTTPS URL.
```

```
|proxy_host
|string
a|Proxy host name.


|proxy_port
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|svm
|link:#svm[svm]
a|SVM, applies only to SVM-scoped objects.


|timeout
|integer
a|Connection timeout in seconds.
```

```
|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application_cred_id": "63e3cb77f84f42b7a0395a3efb7636f9",
  "barbican_reachability": {
    "code": "346758",
    "message": "Barbican KMS is not reachable from all nodes - <reason>.",
    "reachable": ""
  },
  "configuration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "key_id": "https://172.29.58.184:9311/v1/secrets/5c610a4f-ea97-44b5-
8682-f4daeafa9647",
  "keystone_url": "https://keystoneip:5000/v3/auth/tokens",
```

```
  "proxy_host": "proxy.eng.com",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "state": {
    "cluster_state": "",
    "code": "346758",
    "message": "Top-level internal key encryption key is unavailable on
the following nodes with the associated reasons: Node: node1. Reason: No
volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "timeout": 60,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
}
====

== Error
```


Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65539801
| The Barbican Key Management Service is unreachable from one or more
nodes.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#barbican_reachability]
[.api-collapsible-fifth-title]
barbican_reachability

Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Code corresponding to the error message. Returns 0 if Barbican KMS is
reachable from all nodes in the cluster.


|message
|string
a|Set to the appropriate error message when 'reachable' is false.


|reachable
|boolean
a|Set to true if the Barbican KMS is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.
```

```
|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when an SVM-KEK is present on all nodes of the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if the SVM-KEK is
available on all nodes in the cluster.


|message
|string
a|Error message returned when there's no SVM-KEK availability on the
cluster.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===
```

```
[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID8ff6206385cbef6f3b377d3e7801fce0]]
= Update the Barbican KMS configuration

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/security/barbican-kms/{uuid}`#

*Introduced In:* 9.17
```

```
Updates the Barbican KMS configuration.

== Optional properties

* `application_cred_id` - New credentials used to verify the application's
identity to the Barbican KMS. You must provide both `application_cred_id`
and `application_cred_secret` to update the credentials.
* `application_cred_secret` - New credentials secret used to verify the
application's identity to the Barbican KMS. You must provide both
`application_cred_id` and `application_cred_secret` to update the
credentials.
* `proxy_type` - Type of proxy (http/https) if proxy configuration is
used.
* `proxy_host` - Proxy hostname if proxy configuration is used.
* `proxy_port` - Proxy port number if proxy configuration is used.
* `proxy_username` - Proxy username if proxy configuration is used.
* `proxy_password` - Proxy password if proxy configuration is used.
* `verify` - Verify the identity of the Barbican KMS?
* `verify_host` - Verify the identity of the Barbican KMS host name?
* `timeout` - Connection timeout in seconds.

== Related ONTAP commands

* `security key-manager external barbican update-credentials`
* `security key-manager external barbican update-config`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|Barbican KMS UUID


|return_timeout
```

```
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|application_cred_secret
|string
a|Keystone application credentials secret required to access the specified
Barbican KMS. It is not audited.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
```

```
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


|enabled
|boolean
a|Indicates whether the configuration is enabled.


|proxy_host
|string
a|Proxy host name.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
```

```
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|timeout
|integer
a|Connection timeout in seconds.


|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "application_cred_id": "63e3cb77f84f42b7a0395a3efb7636f9",
  "application_cred_secret": "secret",
  "barbican_reachability": {
    "code": "346758",
    "message": "Barbican KMS is not reachable from all nodes - <reason>.",
    "reachable": ""
  },
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
```

```
  "scope": "string",
  "state": {
    "cluster_state": "",
    "code": "346758",
    "message": "Top-level internal key encryption key is unavailable on
the following nodes with the associated reasons: Node: node1. Reason: No
volumes created yet for the SVM. Wrapped KEK status will be available
after creating encrypted volumes."
  },
  "timeout": 60,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
}
====

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 202, Accepted

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65539223
| Failed to check the health of the Barbican Key Management Service.

| 65539814
| Failed to update the Barbican Key Management Service configuration
because the "application-cred-secret" field is invalid or was not
provided.

| 65539815
| Failed to update the Barbican Key Management Service configuration
because the "application-cred-id" field is invalid or was not provided.

| 65539832
| Specified Barbican Key Management Service configuration does not exist.

| 65539841
| Both "application_cred_id" and "application_cred_secret" are required.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#barbican_reachability]
[.api-collapsible-fifth-title]
barbican_reachability

Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Code corresponding to the error message. Returns 0 if Barbican KMS is
reachable from all nodes in the cluster.


|message
|string
a|Set to the appropriate error message when 'reachable' is false.


|reachable
|boolean
```

```
a|Set to true if the Barbican KMS is reachable from all nodes of the
cluster.


|===


[#configuration]
[.api-collapsible-fifth-title]
configuration

Security keystore object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the configuration.


|uuid
|string
a|Keystore UUID.


|===


[#state]
[.api-collapsible-fifth-title]
state

Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|cluster_state
|boolean
a|Set to true when an SVM-KEK is present on all nodes of the cluster.


|code
|string
a|Code corresponding to the status message. Returns a 0 if the SVM-KEK is
available on all nodes in the cluster.


|message
|string
a|Error message returned when there's no SVM-KEK availability on the
cluster.


|===


[#svm]
[.api-collapsible-fifth-title]
svm

SVM, applies only to SVM-scoped objects.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|The name of the SVM. This field cannot be specified in a PATCH method.


|uuid
|string
a|The unique identifier of the SVM. This field cannot be specified in a
PATCH method.
```

```
|===


[#barbican]
[.api-collapsible-fifth-title]
barbican

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|application_cred_id
|string
a|Keystone application credentials ID required to access the specified
Barbican KMS.


|application_cred_secret
|string
a|Keystone application credentials secret required to access the specified
Barbican KMS. It is not audited.


|barbican_reachability
|link:#barbican_reachability[barbican_reachability]
a|Indicates whether the Barbican KMS is reachable from all nodes in the
cluster.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET request or an instance GET request unless it is explicitly
requested using the field's query parameter or GET for all advanced
properties is enabled.


|enabled
|boolean
a|Indicates whether the configuration is enabled.
```

```
|proxy_host
|string
a|Proxy host name.


|proxy_password
|string
a|Proxy password. Password is not audited.


|proxy_port
|integer
a|Proxy port number.


|proxy_type
|string
a|Type of proxy.


|proxy_username
|string
a|Proxy username.


|scope
|string
a|Set to "svm" for interfaces owned by an SVM. Otherwise, set to
"cluster".


|state
|link:#state[state]
a|Indicates whether or not the SVM key encryption key (KEK) is available
cluster wide.
This is an advanced property; there is an added computational cost to
retrieving its value. The property is not populated for either a
collection GET or an instance GET unless it is explicitly requested using
the `fields` query parameter or GET for all advanced properties is
enabled.


|timeout
|integer
a|Connection timeout in seconds.
```

```
|uuid
|string
a|A unique identifier of the Barbican KMS.


|verify
|boolean
a|Verify the identity of the Barbican KMS.


|verify_host
|boolean
a|Verify the identity of the Barbican KMS host name.


|===


[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
```

```
====



[[ID3484ba0d3b430323ca227f2256818d73]]
= Rekey the internal key in the key hierarchy for an SVM with a Barbican
KMS configuration

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/barbican-kms/{uuid}/rekey-internal`#

*Introduced In:* 9.17

Rekeys the internal key in the key hierarchy for an SVM with a Barbican
KMS configuration.

== Related ONTAP commands

* `security key-manager external barbican rekey-internal`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|UUID of the existing Barbican KMS configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
```

```
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536205
| Internal error. Failed to generate SVM key in the kernel.

| 65536882
| Internal error. UUID is missing.

| 65536883
```

```
| Internal error. Volume encryption key is missing.

| 65536884
| Internal error. Volume encryption key is invalid.

| 65536889
| Internal error. Volume has invalid encryption blob.

| 65536973
| Internal error. Volume DSID is missing.

| 65537533
| Internal error. Failed to unwrap SVM key encryption key.

| 65537547
| One or more volume encryption keys (VEKs) for this data SVM's encrypted
volumes are stored in the key manager configured for the admin SVM. Use
the REST API POST method "/api/security/key-
managers/{source.svm.uuid}/migrate" to migrate these keys from the admin
SVM's key manager to this data SVM's key manager before running the rekey
operation.

| 65537556
| ONTAP is unable to encrypt or decrypt because the configured external
key manager is in a blocked state. Possible reasons for a blocked state
include the top-level external key protection key is not found, disabled
or has insufficient privileges. Resolve the external key manager key
issues at the key manager's portal before running the rekey operation.

| 65537565
| Internal error. Failed to update the VDEK blob.

| 65537610
| Rekey cannot be performed while the enabled keystore configuration is
being switched. If a previous attempt to switch the keystore configuration
failed, or was interrupted, the system will continue to prevent rekeying.
Use the REST API PATCH method "/api/security/key-stores/\{uuid}" to re-run
and complete the operation.

| 65539200
| The key custodian not provided with an external key value store.

| 65539201
| Failed to encrypt.

| 65539202
| Failed to decrypt.
```

```
| 65539416
| Internal error. Failed to parse the key value store response.

| 65539436
| Rekey cannot be performed while the enabled keystore configuration is
being initialized. Wait until the keystore is in the active state, and
rerun the rekey operation.

| 65539437
| Rekey cannot be performed while the enabled keystore configuration is
being disabled.

| 65539817
| The Barbican Key Management Service is not configured.

| 65539834
| New Key ID not found.

| 65539836
| No Key Management Service configured.

| 65539844
| Failed to import the SVM-KEK.

| 196608088
| Internal error. Failed to get encryption operation status.

| 196608352
| Internal error. The encryption blob was not found in the RDB table.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
```

```
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====
```

```
[[IDc6d00be40ac111ae5d4a4e7da7c6617b]]
= Restore the keys for an SVM from a configured Barbican KMS

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/barbican-kms/{uuid}/restore`#

*Introduced In:* 9.17

Restores the keys for an SVM from a configured Barbican KMS.

== Related ONTAP commands

* `security key-manager external barbican restore`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|UUID of the existing Barbican KMS configuration.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When doing a POST, PATCH, or DELETE operation on a single record, the
default is 0 seconds.  This means that if an asynchronous operation is
started, the server immediately returns HTTP code 202 (Accepted) along
with a link to the job.  If a non-zero value is specified for POST, PATCH,
or DELETE operations, ONTAP waits that length of time to see if the job
completes so it can return something other than 202.
```

```
* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Response
```

Status: 202, Accepted

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "uuid": "string"
  }
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===

== Response
```

Status: 201, Created

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65539817
| The Barbican Key Management Service is not configured.

| 65539842
| Failed to restore the SVM-KEK on at least one node.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===
```

```
[#_links]
[.api-collapsible-fifth-title]
_links
[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|The UUID of the asynchronous job that is triggered by a POST, PATCH, or
DELETE operation.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
```

```
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


[[ID5a8b6728f7400f83cb88955be16d937a]]
= Create a certificate signing request

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/certificate-signing-request`#

*Introduced In:* 9.8
```

```
This API generates a Certificate Signing Request(CSR) and a private key
pair. A CSR is a message sent securely to a certificate authority (CA) via
any electronic media to apply for a digital identity certificate. This is
a general utility API for users to generate a CSR.

== Required properties

* `subject_name` - Subject details of the certificate, including but not
limited to the common name. Can be omitted if subject_alternatives is
specified.
* `subject_alternatives` - Subject Alternate Name (SAN) extensions. Only
required if a common name is not specified using subject_name.

== Recommended optional properties

* `security_strength` - Key size of the certificate, in bits. Specifying a
stronger security strength in bits is recommended when creating a
certificate. A value of at least 128 is necessary when using EC algorithm
if the certificate is to be used in the context of TLSv1.3.
* `hash_function` -  Hashing function.
* `algorithm` - Asymmetric algorithm. Algorithm used to generate a
public/private key pair when creating a certificate.

== Default property values

If not specified in POST, the following default property values are
assigned:

* `security_strength` - _112_
* `hash_function` - _sha256_
* `algorithm` - _rsa_

== Related ONTAP commands

* `security certificate generate-csr`


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description
```

```
|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|algorithm
|string
a|Asymmetric Encryption Algorithm.


|csr
|string
a|A Certificate Signing Request (CSR) provided to a CA for obtaining a CA-
signed certificate.


|extended_key_usages
|array[string]
a|A list of extended key usage extensions.


|generated_private_key
|string
a|Private key generated for the CSR.


|hash_function
|string
a|Hashing function.
```

```
|key_usages
|array[string]
a|A list of key usage extensions.


|security_strength
|integer
a|Security strength of the certificate in bits.


|subject_alternatives
|link:#subject_alternatives[subject_alternatives]
a|

|subject_name
|string
a|Subject name details of the certificate. The format is a list of comma
separated key=value pairs.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "algorithm": "string",
  "csr": "string",
  "extended_key_usages": [
    "string"
  ],
  "generated_private_key": "string",
  "hash_function": "string",
  "key_usages": [
    "string"
  ],
  "security_strength": 112,
  "subject_alternatives": {
    "dns": [
      "*.example.com"
    ],
    "email": [
      "abc@example.com"
    ],
```

```
    "ip": [
      "10.225.34.10"
    ],
    "uri": [
      "http://example.com"
    ]
  },
  "subject_name": "C=US,O=NTAP,CN=test.domain.com"
}
====

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|algorithm
|string
a|Asymmetric Encryption Algorithm.


|csr
|string
a|A Certificate Signing Request (CSR) provided to a CA for obtaining a CA-
signed certificate.


|extended_key_usages
|array[string]
a|A list of extended key usage extensions.


|generated_private_key
|string
a|Private key generated for the CSR.


|hash_function
|string
a|Hashing function.
```

```
|key_usages
|array[string]
a|A list of key usage extensions.


|security_strength
|integer
a|Security strength of the certificate in bits.


|subject_alternatives
|link:#subject_alternatives[subject_alternatives]
a|

|subject_name
|string
a|Subject name details of the certificate. The format is a list of comma
separated key=value pairs.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "algorithm": "string",
  "csr": "string",
  "extended_key_usages": [
    "string"
  ],
  "generated_private_key": "string",
  "hash_function": "string",
  "key_usages": [
    "string"
  ],
  "security_strength": 112,
  "subject_alternatives": {
    "dns": [
      "*.example.com"
    ],
    "email": [
      "abc@example.com"
```

```
    ],
    "ip": [
      "10.225.34.10"
    ],
    "uri": [
      "http://example.com"
    ]
  },
  "subject_name": "C=US,O=NTAP,CN=test.domain.com"
}
====

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 3735554
| Certificate signing request failed.

| 3735664
| Key size is not supported in FIPS mode.

| 3735665
| Hash function is not supported in FIPS mode.

| 3735700
| Key size is not supported.

| 3735713
| Security strength bits length is not supported.

| 3735714
| Security strength bits length is not supported in FIPS mode.

| 3735715
| Certificate creation requires a common name or SAN extensions.

| 3735741
| Key size is not applicable with the EC encryption algorithm.

| 3735750
```

```
| Cannot supply "critical" as the only value in a list of extension
values.

| 52560173
| Hash function is not supported for digital signatures.

| 52560423
| Failed to read the relative distinguished names.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
[#subject_alternatives]
[.api-collapsible-fifth-title]
subject_alternatives

[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|dns
|array[string]
a|A list of DNS names for Subject Alternate name extension.


|email
|array[string]
a|A list of email addresses for Subject Alternate name extension


|ip
|array[string]
a|A list of IP addresses for Subject Alternate name extension.


|uri
|array[string]
a|A list of URIs for Subject Alternate name extension.


|===


[#certificate_signing_request]
[.api-collapsible-fifth-title]
certificate_signing_request

[cols=3*,options=header]
|===
|Name
|Type
|Description

|algorithm
|string
a|Asymmetric Encryption Algorithm.


|csr
|string
a|A Certificate Signing Request (CSR) provided to a CA for obtaining a CA-
signed certificate.
```

```
|extended_key_usages
|array[string]
a|A list of extended key usage extensions.


|generated_private_key
|string
a|Private key generated for the CSR.


|hash_function
|string
a|Hashing function.


|key_usages
|array[string]
a|A list of key usage extensions.


|security_strength
|integer
a|Security strength of the certificate in bits.


|subject_alternatives
|link:#subject_alternatives[subject_alternatives]
a|

|subject_name
|string
a|Subject name details of the certificate. The format is a list of comma
separated key=value pairs.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
```

```
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===
```

```
//end collapsible .Definitions block
====



= Manage security certificates

:leveloffset: +1


[[ID9dd7d156c49b8a3812385644369d0015]]
= Security certificates endpoint overview



:doctype: book

== Overview

This API displays security certificate information and manages the
certificates in ONTAP.

== Installing certificates in ONTAP

The security certificates GET request retrieves all of the certificates in
the cluster.

== Examples

=== Retrieving all certificates installed in the cluster with their
common-names

----

# The API:
/api/security/certificates

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/certificates?fields=common_name" -H "accept:
application/hal+json"

# The response:
{
"records": [
```

```
  {
    "svm": {
      "name": "vs0"
    },
    "uuid": "dad2363b-8ac0-11e8-9058-005056b482fc",
    "common_name": "vs0",
    "_links": {
      "self": {
        "href": "/api/security/certificates/dad2363b-8ac0-11e8-9058-
005056b482fc"
      }
    }
  },
  {
    "uuid": "1941e048-8ac1-11e8-9058-005056b482fc",
    "common_name": "ROOT",
    "_links": {
      "self": {
        "href": "/api/security/certificates/1941e048-8ac1-11e8-9058-
005056b482fc"
      }
    }
  },
  {
    "uuid": "5a3a77a8-892d-11e8-b7da-005056b482fc",
    "common_name": "cert_name",
    "_links": {
      "self": {
        "href": "/api/security/certificates/5a3a77a8-892d-11e8-b7da-
005056b482fc"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/security/certificates?fields=common_name"
  }
}
}
----

'''

=== Retrieving all certificates installed at cluster-scope with their
```

```
common-names

'''

----

# The API:
/api/security/certificates

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/certificates?scope=cluster&fields=common_name" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "1941e048-8ac1-11e8-9058-005056b482fc",
    "scope": "cluster",
    "common_name": "ROOT",
    "_links": {
      "self": {
        "href": "/api/security/certificates/1941e048-8ac1-11e8-9058-
005056b482fc"
      }
    }
  },
  {
    "uuid": "5a3a77a8-892d-11e8-b7da-005056b482fc",
    "scope": "cluster",
    "common_name": "cert_name",
    "_links": {
      "self": {
        "href": "/api/security/certificates/5a3a77a8-892d-11e8-b7da-
005056b482fc"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/security/certificates?scope=cluster&fields=common_name"
  }
}
```

```
}
----

'''

=== Retrieving all certificates installed on a specific SVM with their
common-names

'''

----

# The API:
/api/security/certificates

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/certificates?svm.name=vs0&fields=common_name" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "svm": {
      "name": "vs0"
    },
    "uuid": "dad2363b-8ac0-11e8-9058-005056b482fc",
    "common_name": "vs0",
    "_links": {
      "self": {
        "href": "/api/security/certificates/dad2363b-8ac0-11e8-9058-
005056b482fc"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/certificates?svm.name=vs0&fields=common_name"
  }
}
}
----
```

```
'''

=== Retrieving a certificate using its UUID for all fields

'''

----

# The API:
/api/security/certificates/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/security/certificates/dad2363b-8ac0-
11e8-9058-005056b482fc?fields=*" -H "accept: application/hal+json"

# The response:
{
"svm": {
  "uuid": "d817293c-8ac0-11e8-9058-005056b482fc",
  "name": "vs0"
},
"uuid": "dad2363b-8ac0-11e8-9058-005056b482fc",
"scope": "svm",
"type": "server",
"common_name": "vs0",
"serial_number": "15428D45CF81CF56",
"ca": "vs0",
"hash_function": "sha256",
"key_size": 2048,
"expiry_time": "2019-07-18T15:29:14-04:00",
"public_certificate": "-----BEGIN CERTIFICATE-----
\nMIIDQjCCAiqgAwIBAgIIFUKNRc+Bz1YwDQYJKoZIhvcNAQELBQAwGzEMMAoGA1UE\nAxMDdn
MwMQswCQYDVQQGEwJVUzAeFw0xODA3MTgxOTI5MTRaFw0xOTA3MTgxOTI5\nMTRaMBsxDDAKBg
NVBAMTA3ZzMDELMAkGA1UEBhMCVVMwggEiMA0GCSqGSIb3DQEB\nAQUAA4IBDwAwggEKAoIBAQ
CqFQb27th2ACOmJvWgLh1xRzobSb2ZTQfO561faXQ3\nIbiT+rnRWXetd/s2+iCv91d9LW0NOm
P3MN2f3SFbyze3dl7WrnVbjLmYuI9MfOxs\nfmA+Bh6gpap5Yn2YddqoV6rfNGAuUveNLArNl8
wODk/mpawpEQ93QSa1Zfg1gnoH\nRFrYqiSYT06X5g6RbUuEl4LTGXspz+plU46Za0i6QyxtvZ
4bneibffXN3IigpqI6\nTGUV8R/J3Ps338VxVmSO9ZXBZmvbcJVoysYNICl/oi3fgPZlnBv0tb
swqg4FoZO/\nWT+XHGhLep6cr/Aqg7u6C4RfqbCwzB/XFKDIqnmAQkDBAgMBAAGjgYkwgYYwDA
YD\nVR0TBAUwAwEB/zALBgNVHQ8EBAMCAQYwHQYDVR0OBBYEFN/AnH8qLxocTtumNHIn\nEN4I
FIDBMEoGA1UdIwRDMEGAFN/AnH8qLxocTtumNHInEN4IFIDBoR+kHTAbMQww\nCgYDVQQDEwN2
czAxCzAJBgNVBAYTAlVTgggVQo1Fz4HPVjANBgkqhkiG9w0BAQsF\nAAOCAQEAa0pUEepdeQnd
2Amwg8UFyxayb8eu3E6dlptvtyp+xtjhIC7Dh95CVXhy\nkJS3Tsu60PGR/b2vc3MZtAUpcL4c
eD8XntKPQgBlqoB4bRogCe1TnlGswRXDX5TS\ngMVrRjaWTBF7ikT4UjR05rSxcDGplQRqjnOt
hqi+yPT+29+8a4Uu6J+3Kdrflj4p\n1nSWpuB9EyxtuCILNqXA2ncH7YKtoeNtChKCchhvPcoT
y6Opma6UQn5UMxstkvGT\nVGaN5TlRWv0yiqPXIQblSqXi/uQsuRPcHDu7+KWRFn08USa6QVo2
```

```
mDs9P7R9dd0K\n9QAsTjTOF9PlAKgNxGoOJl2y0+48AA==\n-----END CERTIFICATE-----
\n",
"_links": {
  "self": {
    "href": "/api/security/certificates/dad2363b-8ac0-11e8-9058-
005056b482fc"
  }
}
}
```


```
---

=== Creating a certificate in a cluster

These certificates can be used to help administrators enable certificate-
based authentication and to enable SSL-based communication to the cluster.

----

# The API:
/api/security/certificates

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificates" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"common_name\": \"TEST-SERVER\",  \"type\": \"server\"  }"
----

=== Installing a certificate in a cluster

These certificates can be used to help administrators enable certificate-
based authentication and to enable-SSL based communication to the cluster.

----

# The API:
/api/security/certificates

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificates" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{ \"type\":
\"server_ca\", \"public_certificate\": \"-----BEGIN CERTIFICATE-----
```

```
\nMIIFYDCCA0igAwIBAgIQCgFCgAAAAUUjyES1AAAAAjANBgkqhkiG9w0BAQsFADBKMQswCQYD
VQQG\nEwJVUzESMBAGA1UEChMJSWRlblRydXN0MScwJQYDVQQDEx5JZGVuVHJ1c3QgQ29tbWVy
Y2lhbCBS\nb290IENBIDEwHhcNMTQwMTE2MTgxMjIzWhcNMzQwMTE2MTgxMjIzWjBKMQswCQYD
VQQGEwJVUzES\nMBAGA1UEChMJSWRlblRydXN0MScwJQYDVQQDEx5JZGVuVHJ1c3QgQ29tbWVy
Y2lhbCBSb290IENB\nIDEwggIiMA0GCSqGSIb3DQEBAQUAA4ICDwAwggIKAoICAQCnUBneP5k9
1DNG8W9RYYKyqU+PZ4ld\nhNlT3Qwo2dfw/66VQ3KZ+bVdfIrBQuExUHTRgQ18zZshq0PirK1e
```

```
hm7zCYofWjK9ouuU+ehcCuz/\nmNKvcbO0U59Oh++SvL3sTzIwiEsXXlfEU8L2ApeN2WIrvyQf
Yo3fw7gpS0l4PJNgiCL8mdo2yMKi\n1CxUAGc1bnO/AljwpN3lsKImesrgNqUZFvX9t++uP0D1
bVoE/c40yiTcdCMbXTMTEl3EASX2MN0C\nXZ/g1Ue9tOsbobtJSdifWwLziuQkkORiT0/Br4sO
dBeo0XKIanoBScy0RnnGF7HamB4HWfp1IYVl\n3ZBWzvurpWCdxJ35UrCLvYf5jysjCiN2O/cz
4ckA82n5S6LgTrx+kzmEB/dEcH7+B1rlsazRGMzy\nNeVJSQjKVsk9+w8YfYs7wRPCTY/JTw43
6R+hDmrfYi7LNQZReSzIJTj0+kuniVyc0uMNOYZKdHzV\nWYfCP04MXFL0PfdSgvHqo6z9STQa
KPNBiDoT7uje/5kdX7rL6B7yuVBgwDHTc+XvvqDtMwt0viAg\nxGds8AgDelWAf0ZOlqf0Hj7h
9tgJ4TNkK2PXMl6f+cB7D3hvl7yTmvmcEpB4eoCHFddydJxVdHix\nuuFucAS6T6C6aMN7/zHw
cz09lCqxC0EOoP5NiGVreTO01wIDAQABo0IwQDAOBgNVHQ8BAf8EBAMC\nAQYwDwYDVR0TAQH/
BAUwAwEB/zAdBgNVHQ4EFgQU7UQZwNPwBovupHu+QucmVMiONnYwDQYJKoZI\nhvcNAQELBQAD
ggIBAA2ukDL2pkt8RHYZYR4nKM1eVO8lvOMIkPkp165oCOGUAFjvLi5+U1KMtlwH\n6oi6mYtQ
lNeCgN9hCQCTrQ0U5s7B8jeUeLBfnLOic7iPBZM4zY0+sLj7wM+x8uwtLRvM7Kqas6pg\nghst
O8OEPVeKlh6cdbjTMM1gCIOQ045U8U1mwF10A0Cj7oV+wh93nAbowacYXVKV7cndJZ5t+qnt\n
ozo00Fl72u1Q8zW/7esUTTHHYPTa8Yec4kjixsU3+wYQ+nVZZjFHKdp2mhzpgq7vmrlR94gjmm
mV\nYjzlVYA211QC//G5Xc7UI2/YRYRKW2XviQzdFKcgyxilJbQN+QHwotL0AMh0jqEqSI5l2x
PE4iUX\nfeu+h1sXIFRRk0pTAwvsXcoz7WL9RccvW9xYoIA55vrX/hMUpu09lEpCdNTDd1lzzY
9GvlU47/ro\nkTLql1gEIt44w8y8bckzOmoKaT+gyOpyj4xjhiO9bTyWnpXgSUyqorkqG5w2gX
jtw+hG4iZZRHUe\n2XWJUc0QhJ1hYMtd+ZciTY6Y5uN/9lu7rs3KSoFrXgvzUeF0K+l+J6fZmU
lO+KWA2yUPHGNiiskz\nZ2s8EIPGrd6ozRaOjfAHN3Gf8qv8QfXBi+wAN10J5U6A7/qxXDgGpR
tK4dw4LTzcqx+QGtVKnO7R\ncGzM7vRX+Bi6hG6H\n-----END CERTIFICATE-----\n\"
}"
----

'''

=== Installing a certificate on a specific SVM

'''

----

# The API:
/api/security/certificates

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificates" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{   \"svm\" : {
\"name\" : \"vs0\" }, \"type\": \"server_ca\", \"public_certificate\":
\"-----BEGIN CERTIFICATE-----
\nMIIFYDCCA0igAwIBAgIQCgFCgAAAAUUjyES1AAAAAjANBgkqhkiG9w0BAQsFADBKMQswCQYD
VQQG\nEwJVUzESMBAGA1UEChMJSWRlblRydXN0MScwJQYDVQQDEx5JZGVuVHJ1c3QgQ29tbWVy
Y2lhbCBS\nb290IENBIDEwHhcNMTQwMTE2MTgxMjIzWhcNMzQwMTE2MTgxMjIzWjBKMQswCQYD
VQQGEwJVUzES\nMBAGA1UEChMJSWRlblRydXN0MScwJQYDVQQDEx5JZGVuVHJ1c3QgQ29tbWVy
Y2lhbCBSb290IENB\nIDEwggIiMA0GCSqGSIb3DQEBAQUAA4ICDwAwggIKAoICAQCnUBneP5k9
1DNG8W9RYYKyqU+PZ4ld\nhNlT3Qwo2dfw/66VQ3KZ+bVdfIrBQuExUHTRgQ18zZshq0PirK1e
hm7zCYofWjK9ouuU+ehcCuz/\nmNKvcbO0U59Oh++SvL3sTzIwiEsXXlfEU8L2ApeN2WIrvyQf
```

```
Yo3fw7gpS0l4PJNgiCL8mdo2yMKi\n1CxUAGc1bnO/AljwpN3lsKImesrgNqUZFvX9t++uP0D1
bVoE/c40yiTcdCMbXTMTEl3EASX2MN0C\nXZ/g1Ue9tOsbobtJSdifWwLziuQkkORiT0/Br4sO
dBeo0XKIanoBScy0RnnGF7HamB4HWfp1IYVl\n3ZBWzvurpWCdxJ35UrCLvYf5jysjCiN2O/cz
4ckA82n5S6LgTrx+kzmEB/dEcH7+B1rlsazRGMzy\nNeVJSQjKVsk9+w8YfYs7wRPCTY/JTw43
6R+hDmrfYi7LNQZReSzIJTj0+kuniVyc0uMNOYZKdHzV\nWYfCP04MXFL0PfdSgvHqo6z9STQa
KPNBiDoT7uje/5kdX7rL6B7yuVBgwDHTc+XvvqDtMwt0viAg\nxGds8AgDelWAf0ZOlqf0Hj7h
9tgJ4TNkK2PXMl6f+cB7D3hvl7yTmvmcEpB4eoCHFddydJxVdHix\nuuFucAS6T6C6aMN7/zHw
cz09lCqxC0EOoP5NiGVreTO01wIDAQABo0IwQDAOBgNVHQ8BAf8EBAMC\nAQYwDwYDVR0TAQH/
BAUwAwEB/zAdBgNVHQ4EFgQU7UQZwNPwBovupHu+QucmVMiONnYwDQYJKoZI\nhvcNAQELBQAD
ggIBAA2ukDL2pkt8RHYZYR4nKM1eVO8lvOMIkPkp165oCOGUAFjvLi5+U1KMtlwH\n6oi6mYtQ
lNeCgN9hCQCTrQ0U5s7B8jeUeLBfnLOic7iPBZM4zY0+sLj7wM+x8uwtLRvM7Kqas6pg\nghst
O8OEPVeKlh6cdbjTMM1gCIOQ045U8U1mwF10A0Cj7oV+wh93nAbowacYXVKV7cndJZ5t+qnt\n
ozo00Fl72u1Q8zW/7esUTTHHYPTa8Yec4kjixsU3+wYQ+nVZZjFHKdp2mhzpgq7vmrlR94gjmm
mV\nYjzlVYA211QC//G5Xc7UI2/YRYRKW2XviQzdFKcgyxilJbQN+QHwotL0AMh0jqEqSI5l2x
PE4iUX\nfeu+h1sXIFRRk0pTAwvsXcoz7WL9RccvW9xYoIA55vrX/hMUpu09lEpCdNTDd1lzzY
9GvlU47/ro\nkTLql1gEIt44w8y8bckzOmoKaT+gyOpyj4xjhiO9bTyWnpXgSUyqorkqG5w2gX
jtw+hG4iZZRHUe\n2XWJUc0QhJ1hYMtd+ZciTY6Y5uN/9lu7rs3KSoFrXgvzUeF0K+l+J6fZmU
lO+KWA2yUPHGNiiskz\nZ2s8EIPGrd6ozRaOjfAHN3Gf8qv8QfXBi+wAN10J5U6A7/qxXDgGpR
tK4dw4LTzcqx+QGtVKnO7R\ncGzM7vRX+Bi6hG6H\n-----END CERTIFICATE-----\n\"
}"
----

'''

=== Installing a CA-signed certificate on a specific SVM

'''

----

# The API:
/api/security/certificates

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificates" -H  "accept:
application/json" -H  "Content-Type: application/json" -d "{   \"svm\" : {
\"name\" : \"vs0\" }, \"type\": \"server\", \"public_certificate\":
\"-----BEGIN CERTIFICATE-----
\nMIIDzzCCAregAwIBAgIEZjzc8TANBgkqhkiG9w0BAQsFADCBgTEYMBYGA1UEAxMP\nZWxzZS
5uZXRhcHAuY29tMQswCQYDVQQGEwJVUzELMAkGA1UECBMCTkMxDDAKBgNV\nBAcTA1JUUDEPMA
0GA1UEChMGTmV0YXBwMQ0wCwYDVQQLEwRTREZJMR0wGwYJKoZI\nhvcNAQkBFg5ydHBAbmV0YX
BwLmNvbTAeFw0yNDA1MDkxNDI1NTNaFw0yNDA2MDgx\nNDI1NTNaMIGBMRgwFgYDVQQDEw9lbH
NlLm5ldGFwcC5jb20xCzAJBgNVBAYTAlVT\nMQswCQYDVQQIEwJOQzEMMAoGA1UEBxMDUlRQMQ
8wDQYDVQQKEwZOZXRhcHAxDTAL\nBgNVBAsTBFNERkkxHTAbBgkqhkiG9w0BCQEWDnJ0cEBuZX
RhcHAuY29tMIIBIjAN\nBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAvKILXjqStcArpQc+9W
bBf5SwGINK\nfOJjMIAzB/Nt3VdL5Tmhem/JN7wjfdZgP0oUTugbppBz0DL+TcBrqBg1vvkJiE
```

```
cn\nrSBlGsRWy74nQb5aTdG14/25Xc5LmGRemJ1g7SY0ZYuRh9Gc+A/AigfATUpY4QwJ\npthq
KvroSTyG57uAwno8DqqNkhrBNvmW1r97+8pOtL83/2io/1Bzn1Y45eW0xw+o\nVjYpBemhWpTs
/lZp5/hleaesDPeysP/oW6gCZXQP7uIT/qXbf6UnvclHXblGC/+Z\n6ZsOakbCq+wJyU20YfFH
5Gpc0s2w0geVYrboDcLNI9PSh9Fz9MHicFOY3wIDAQAB\no00wSzAJBgNVHRMEAjAAMB0GA1Ud
DgQWBBR0al7824VkIu11jvRxDJbfzgCU2TAf\nBgNVHSMEGDAWgBQG5FApBQQpmBeEF2r834VP
4NCSkjANBgkqhkiG9w0BAQsFAAOC\nAQEABURkxch28DK1xsJgOQ0/Lk1chqoMg1mIf30WwqAY
wAAcBudoHjF8hsGAibkX\n+fu3l14FI02GcapQpJ63E8HpcthDPGhVBeTeKYVMctuLYNtM0fyu
cnxzDrTRjWCP\n5tgBOfNFuEucwVu6wAtulZV31hwgYdE3Oj6/M/v6U3xLxXDV0HGC2lpRmWEO
4a2j\nTsGml0D2xtpfHqujxbmzv/Fw0FPNY0K6Ee4A1jDxQ+tKOYLHhXeZAoksLc/VqPWM\n6u
AYnxhm9FZiPNx5/ysV11yNmvTFARyLbj2CJog5jbld2so3liDBcEL1xy9/bToK\nMoBBKg5TQ1
r20GJ3XZ23sZTbUg==\n-----END CERTIFICATE-----\n\", \"private_key\":
\"-----BEGIN PRIVATE KEY-----\n-----END PRIVATE KEY-----\n\",
\"intermediate_certificates\": [\"-----BEGIN CERTIFICATE-----
\nMIID0jCCArqgAwIBAgIEZjzc8TANBgkqhkiG9w0BAQsFADCBgTEYMBYGA1UEAxMP\nc2VsZi
5uZXRhcHAuY29tMQswCQYDVQQGEwJVUzELMAkGA1UECBMCTkMxDDAKBgNV\nBAcTA1JUUDEPMA
0GA1UEChMGTmV0QXBwMQ0wCwYDVQQLEwRTREZJMR0wGwYJKoZI\nhvcNAQkBFg5ydHBAbmV0YX
BwLmNvbTAeFw0yNDA1MDkxNDI1NTNaFw0yNDA2MDgx\nNDI1NTNaMIGBMRgwFgYDVQQDEw9lbH
NlLm5ldGFwcC5jb20xCzAJBgNVBAYTAlVT\nMQswCQYDVQQIEwJOQzEMMAoGA1UEBxMDUlRQMQ
8wDQYDVQQKEwZOZXRhcHAxDTAL\nBgNVBAsTBFNERkkxHTAbBgkqhkiG9w0BCQEWDnJ0cEBuZX
RhcHAuY29tMIIBIjAN\nBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAp9N/ETcywcV2qieDVf
zz1StpbFLp\n6t/nAvYiUbnnlzHOSbtckmu3aV9qWHaEJhN3Oflt85UWjWSJdJX7LZrNjiCA1J
5H\ndcfa8k1utDwD4EMRFaSmFxOqqr//NGjlr5d5CBo38NRWDz73Czss7hITtSb+tZpI\nOuh6
9Irif6CsrJE2pSIzvJXOn8T2SvBxhK50z/iSY6eKWV9OObk1H0mBw/g6yRzY\n34n0/fyeQ2cp
ZcnHa3XN9B8KPMXF2aJiOGSxM1ZMJcomIbyrLl/ChiYNTfXbeZ12\naBjkpSfiyDlXLV6g+iQH
mEQfvJdXljCG7Sfp6u9y0vNWKfRxrvx6vsKkVwIDAQAB\no1AwTjAMBgNVHRMEBTADAQH/MB0G
A1UdDgQWBBQG5FApBQQpmBeEF2r834VP4NCS\nkjAfBgNVHSMEGDAWgBQgw94oenC0Ban0MZ9g
TOJ4oHRPYDANBgkqhkiG9w0BAQsF\nAAOCAQEATrl8iDrEc69X3DfGwcuv7nzUif9Plk/w+3p/
2lEMEVTuqkg4vHUcRwAZ\nblINoFJSkqxThWI0lDaDPUBKudchLGRiJdtmZWfU+hFWn2rGiKxB
4Ejf3cULU87h\nvrGs2EoGb8hHxn0d2Kgth+vFbaPyFr+me4qWZwAmS58b2jtDkdFTjHae512/
hyIZ\nXgf+0YUUQ2wyhsVquoLbWfL/RojPbyMWVGuTeiUXGoW6cw1G/jrxm0ZkSTfVMYjX\njL
C1MjHH8I6n3GkVWnNe54+8Fhax8bUIOHhRQQJSzjezRS1Oik3mTMpn+gOi+udI\n+YmIPyvF2m
FBxGdH7ORm3vPVX/TTFw==\n-----END CERTIFICATE-----\n\",\"-----BEGIN
CERTIFICATE-----
\nMIIEejCCA2KgAwIBAgIEZjzc8TANBgkqhkiG9w0BAQsFADCBgTEYMBYGA1UEAxMP\nc2VsZi
5uZXRhcHAuY29tMQswCQYDVQQGEwJVUzELMAkGA1UECBMCTkMxDDAKBgNV\nBAcTA1JUUDEPMA
0GA1UEChMGTmV0QXBwMQ0wCwYDVQQLEwRTREZJMR0wGwYJKoZI\nhvcNAQkBFg5ydHBAbmV0YX
BwLmNvbTAeFw0yNDA1MDkxNDI1NTNaFw0yNDA2MDgx\nNDI1NTNaMIGBMRgwFgYDVQQDEw9zZW
xmLm5ldGFwcC5jb20xCzAJBgNVBAYTAlVT\nMQswCQYDVQQIEwJOQzEMMAoGA1UEBxMDUlRQMQ
8wDQYDVQQKEwZOZXRBcHAxDTAL\nBgNVBAsTBFNERkkxHTAbBgkqhkiG9w0BCQEWDnJ0cEBuZX
RhcHAuY29tMIIBIjAN\nBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAz+KWK+qQa9AEywWqer
H+KnoqYUht\nX34BBjChubmVWos1HHdh3BIvC/Qh3xQPc5kQvd6LRER5kAkoLyxKHnzwKIU5re
yg\n7i2HZ+2XChs2tF6HK6y1T57XObe4L7nwEL26I6E5bzUhVak/LYuzsMerm+sCEBi+\nB55d
fLNrZN3St/S2fhiBe5dcsl+k+MI+TXnCBBM9ujYJaQ9dmWIxMbBtR8cynGKv\nG8pGisRstyue
ORRjRzelU8dl3Q1j6BcJ4RWl+GsLXSJ8tPa7uJ23elZrYpt2ed/z\nJApoo4N0oa3pjxSnwXGx
Xtp/9LSDzJ7wsTRm03+YFqAI+6QSJbzkaQrpvwIDAQAB\no4H3MIH0MA8GA1UdEwEB/wQFMAMB
Af8wDgYDVR0PAQH/BAQDAgEGMB0GA1UdDgQW\nBBQgw94oenC0Ban0MZ9gTOJ4oHRPYDCBsQYD
```

VR0jBIGpMIGmgBQgw94oenC0Ban0\nMZ9gTOJ4oHRPYKGBh6SBhDCBgTEYMBYGA1UEAxMPc2Vs
Zi5uZXRhcHAuY29tMQsw\nCQYDVQQGEwJVUzELMAkGA1UECBMCTkMxDDAKBgNVBAcTA1JUUDEP
MA0GA1UEChMG\nTmV0QXBwMQ0wCwYDVQQLEwRTREZJMR0wGwYJKoZIhvcNAQkBFg5ydHBAbmV0
YXBw\nLmNvbYIEZjzc8TANBgkqhkiG9w0BAQsFAAOCAQEAOoHdvKuRZHSBvShDvmk2bbOu\n0K
OUQZsEWLhtSVHVh4vLNqiLpB29ztBNVHLHGBxX0rcWWLdQ/16R29mN7VE+CY/3\nu1ODXTrUB9
5jVfXRzDJRWZa6MGu4qCfkt61mYEstwXJP3Aoo9W2EgRE4IcxtaV0i\nS5XZucrWlLYSP+ZmxY
gRp8Ru8KvMhv55jYNB290tYOBxuYc2XaaO41noLBu5/aaF\nthaCiuEDygqv8mYnnHlyf72qmm
rgzq5NhTbmnAEiBnCFg3voDYUP4i+iq4eoiduZ\nxOAyTxVT+dZrQpWRbsp6CCRZDuvLWAStqo
VpXqNV7UNZTYrXDYMXP+RxBdOEfA==\n-----END CERTIFICATE-----\n\"]}"
```
---

'''

=== Deleting a certificate using its UUID

'''

----

# The API:
/api/security/certificates/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/certificates/dad2363b-8ac0-
11e8-9058-005056b482fc?fields=*" -H "accept: application/hal+json"
----

=== Signing a new certificate signing request using an existing CA
certificate UUID

Once you have created a certificate of type "root_ca", you can use that
certificate to act as a local Certificate Authority to sign new
certificate signing requests. The following example signs a new
certificate signing request using an existing CA certificate UUID. If
successful, the API returns a signed certificate.

----

# The API:
/api/security/certificates/{ca.uuid}/sign

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificates/253add53-8ac9-
11e8-9058-005056b482fc/sign" -H  "accept: application/json" -H  "Content-
Type: application/json" -d "{ \"signing_request\": \"-----BEGIN
CERTIFICATE REQUEST-----
```
\nMIICYTCCAUkCAQAwHDENMAsGA1UEAxMEVEVTVDELMAkGA1UEBhMCVVMwggEiMA0G\nCSqGSI

```
b3DQEBAQUAA4IBDwAwggEKAoIBAQCiBCuVfbYHNdOO7vjRQja4JqL2cHqK\ndrlTj5hz9RVqFK
Z7VPh8DSP9LoTbYWsvrTkbuD0Wi715MVQCsbkq/mHos+Y5lfqs\nNP5K92fc6EhBzBDYFgZGFn
tZYJjEG5MPerIUE7CfVy7o6sjWOlxeY33pjefObyvP\nBcJkBHg6SFJK/TDLvIYJkonLkJEOJo
TI6++a3I/1bCMfUeuRtLU9ThWlna1kMMYK\n4T16/Bxgm4bha2U2jtosc0Wltnld/capc+eqRV
07WVbMmEOTtop3cv0h3N0S6lbn\nFkd96DXzeGWbSHFHckeCZ9bOHhnVbfEa/efkPLx7ziMC8G
tRHHlwbnK7AgMBAAGg\nADANBgkqhkiG9w0BAQsFAAOCAQEAf+rs1i5PHaOSI2HtTM+Hcv/p71
yzgoLL+aeU\ntB0V4iuoXdqY8oQeWoPI92ci0K08JuSpu6D0DwCKlstfwuGkAA2b0Wr7ZDRonT
Uq\nmJ4j3O47MLysW4Db2LbGws/AuDsCIrBJDWHMpHaqsvRbpMx2xQ/V5oagUw5eGGpN\ne4fg
/E2k9mGkpxwkUzT7w1RZirpND4xL+XTzpzeZqgalpXug4yjIXlI5hpRESZ9/\nAkGJSCWxI15I
ZdxxFVXlBcmm6WpJnnboqkcKeXz95GM6Re+oBy9tlgvwvlVd5s8uHX+bycFiZp09Wsm8Ev727M
ziZ+0II9nxwkDKsdPvam+KLI9hLQ==\n-----END CERTIFICATE REQUEST-----\n\",
\"hash_function\": \"sha256\"}"

# The response:
{
"public_certificate": "-----BEGIN CERTIFICATE-----
\nMIIDBzCCAe+gAwIBAgIIFUKQpcqeaUAwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxMEUk
FDWDELMAkGA1UEBhMCVVMwHhcNMTgwNzE4MjAzMTA1WhcNMTkwNzE4MjAz\nMTA1WjAcMQ0wCw
YDVQQDEwRURVNUMQswCQYDVQQGEwJVUzCCASIwDQYJKoZIhvcN\nAQEBBQADggEPADCCAQoCgg
EBAKIEK5V9tgc1047u+NFCNrgmovZweop2uVOPmHP1\nFWoUpntU+HwNI/0uhNthay+tORu4PR
aLvXkxVAKxuSr+Yeiz5jmV+qw0/kr3Z9zo\nSEHMENgWBkYWe1lgmMQbkw96shQTsJ9XLujqyN
Y6XF5jfemN585vK88FwmQEeDpI\nUkr9MMu8hgmSicuQkQ4mhMjr75rcj/VsIx9R65G0tT1OFa
WdrWQwxgrhPXr8HGCb\nhuFrZTaO2ixzRaW2eV39xqlz56pFXTtZVsyYQ5O2indy/SHc3RLqVu
cWR33oNfN4\nZZtIcUdyR4Jn1s4eGdVt8Rr95+Q8vHvOIwLwa1EceXBucrsCAwEAAaNNMEswCQ
YD\nVR0TBAIwADAdBgNVHQ4EFgQUJMPxjeW1G76TbbD2tXB8dwSpI3MwHwYDVR0jBBgw\nFoAU
u5aH0mWR4cFoN9i7k96d2op3sPwwDQYJKoZIhvcNAQELBQADggEBAI5ai+Zi\nFQZUXRTqJCgH
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qz1BY78PSgUwPH/IyARTEOBeikp6KdwMPraehDIBMAcc\nANY58wXiTBbsl8UMD6tGecgnzw6s
xlMmadGvrfJeJmgY4zert6NNvgtTPhcZQdLS\nE0fGzHS6+3ajCCfEEhPNPeR9D0e5Me81i9Es
QGENrnJzTci8rzXPuF4bC3gghrK1\nI1+kmJQ1kLYVUcsntcrIiHmNvtPFJY6stjDgQKS9aDd/
THhPpokPtZoCmE6PDxh6\nR+dO6C0hcDKHFzA=\n-----END CERTIFICATE-----\n"
}
----

=== Generate a new Certificate Signing Request (CSR)

----

# The API:
/api/security/certificate-signing-request

# The call:
curl -X POST "https://<mgmt-ip>/api/security/certificate-signing-request"
-H  "accept: application/json" -H  "Content-Type: application/json" -d "{
\"algorithm\": \"rsa\", \"extended_key_usage\": [\"serverauth\"],
\"hash_function\": \"sha256\",  \"key_usage\": [\"digitalsignature\"],
```

```
\"security_strength\": \"112\", \"subject_alternatives\": { \"dns\": [
\"*.example.com\", \"*.example1.com\" ], \"email\": [\"abc@example.com\",
\"abc@example1.com\"], \"ip\": [\"10.225.34.223\", \"10.225.34.224\"],
\"uri\": [\"http://example.com\", \"http://example1.com\"] },
\"subject_name\": \"C=US,O=NTAP,CN=test.domain.com\"}"
{
"csr": "-----BEGIN CERTIFICATE REQUEST-----\n-----END CERTIFICATE
REQUEST-----\n",
"generated_private_key": "-----BEGIN PRIVATE KEY-----\n-----END PRIVATE
KEY-----\n"
}
----

'''

----

### Download and install a certificate from the Azure Key Vault.
----

= The API:

/api/security/certificates

= The call:

curl -X POST "https://+++<mgmt-ip>+++/api/security/certificates" -H
"accept: application/json" -H "Content-Type: application/json" -d
"{\"svm\": {\"name\" : \"vs0\"}, \"name\" : \"vs0-client-cert\", \"type\"
: \"client\", \"azure\": { \"key_vault\" :
\"https://example.vault.azure.net\", \"client_id\" : \"12345678-abcd-1234-
12ad-dfasdffgfdaaa\", \"tenant_id\" : \"12345678-abcd-abcd-test-
720ef604b100\", \"client_secret\" : \"clientSecretString\",
\"verify_host\": false }}" { "job": { "uuid": "be8d45cb-1d41-11ee-9725-
005056ae0f31", "_links": { "self": { "href": "/api/cluster/jobs/be8d45cb-
1d41-11ee-9725-005056ae0f31" } } } }+++</mgmt-ip>+++
```

Retrieve security certificates

GET `/security/certificates`

Introduced In: 9.6

Retrieves security certificates.

Related ONTAP commands

- `security certificate show`

Parameters

Name	Type	In	Required	Description
subject_key_identifier	string	query	False	Filter by subject_key_identifier • Introduced in: 9.8
public_certificate	string	query	False	Filter by public_certificate • Introduced in: 9.8
subject_alternatives.email	string	query	False	Filter by subject_alternatives.email • Introduced in: 9.15
subject_alternatives.ip	string	query	False	Filter by subject_alternatives.ip • Introduced in: 9.15
subject_alternatives.uri	string	query	False	Filter by subject_alternatives.uri • Introduced in: 9.15
subject_alternatives.dns	string	query	False	Filter by subject_alternatives.dns • Introduced in: 9.15
scope	string	query	False	Filter by scope

Name	Type	In	Required	Description
name	string	query	False	Filter by name • Introduced in: 9.8
expiry_time	string	query	False	Filter by expiry_time
uuid	string	query	False	Filter by uuid • Introduced in: 9.8
ca	string	query	False	Filter by ca • maxLength: 256 • minLength: 1
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
key_size	integer	query	False	Filter by key_size
common_name	string	query	False	Filter by common_name
serial_number	string	query	False	Filter by serial_number • maxLength: 40 • minLength: 1
authority_key_identifier	string	query	False	Filter by authority_key_identifier • Introduced in: 9.8
hash_function	string	query	False	Filter by hash_function
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[security_certificate]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authority_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D7",
      "azure": {
        "verify_host": true
      },
      "ca": "string",
      "common_name": "test.domain.com",
      "expiry_time": "2030-01-25 06:20:13 -0500",
      "hash_function": "string",
      "key_size": 512,
      "name": "string",
      "public_certificate": "-----BEGIN CERTIFICATE-----
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n",
      "scope": "string",
      "serial_number": "string",
      "subject_alternatives": {
        "dns": [
          "*.example.com"
```

```
          ],
          "email": [
            "<a href="mailto:abc@example.com">abc@example.com</a>"
          ],
          "ip": [
            "10.225.34.10"
          ],
          "uri": [
            "http://example.com"
          ]
        },
        "subject_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D8",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "type": "string",
        "uuid": "string"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

proxy

azure

Name	Type	Description
proxy	proxy	

subject_alternatives

Name	Type	Description
dns	array[string]	A list of DNS names for Subject Alternate name extension.
email	array[string]	A list of email addresses for Subject Alternate name extension
ip	array[string]	A list of IP addresses for Subject Alternate name extension.
uri	array[string]	A list of URIs for Subject Alternate name extension.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_certificate

Name	Type	Description
_links	_links	
authority_key_identifier	string	Provides the key identifier of the issuing CA certificate that signed the SSL certificate.
azure	azure	
ca	string	Certificate authority
common_name	string	FQDN or custom common name. Provide on POST when creating a self-signed certificate.
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. Can be provided on POST if creating self-signed certificate. The expiration time range is between 1 day to 10 years.
hash_function	string	Hashing function. Can be provided on POST when creating a self-signed certificate. Hash functions md5 and sha1 are not allowed on POST.
key_size	integer	Key size of requested Certificate in bits. One of 512, 1024, 1536, 2048, 3072. Can be provided on POST if creating self-signed certificate with a minimum permissible value of 2048.

Name	Type	Description
name	string	Certificate name or name of the certificate to be downloaded from the Azure Key Vault (AKV). If not provided in POST, a unique name specific to the SVM is automatically generated.
public_certificate	string	Public key Certificate in PEM format. If this is not provided in POST, a self-signed certificate is created.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
serial_number	string	Serial number of certificate.
subject_alternatives	subject_alternatives	
subject_key_identifier	string	Provides the key identifier used to identify the public key in the SSL certificate.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	Type of Certificate. The following types are supported: • client - a certificate and its private key used by an SSL client in ONTAP. • server - a certificate and its private key used by an SSL server in ONTAP. • client_ca - a Certificate Authority certificate used by an SSL server in ONTAP to verify an SSL client certificate. • server_ca - a Certificate Authority certificate used by an SSL client in ONTAP to verify an SSL server certificate. • root_ca - a self-signed certificate used by ONTAP to sign other certificates by acting as a Certificate Authority. • enum: ["client", "server", "client_ca", "server_ca", "root_ca"] • Introduced in: 9.6 • x-nullable: true
uuid	string	Unique ID that identifies a certificate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create or install security certificates

POST `/security/certificates`

Introduced In: 9.6

Creates or installs a certificate or downloads a certificate from Azure Key Vault (AKV) and installs it on the ONTAP cluster.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create or install the certificate.
- `common_name` - Common name of the certificate. Required when creating a certificate.
- `type` - Type of certificate.
- `public_certificate` - Public key certificate in PEM format. Required when installing a certificate.
- `private_key` - Private key certificate in PEM format. Required when installing a CA-signed certificate.

Recommended optional properties

- `expiry_time` - Certificate expiration time. Specifying an expiration time is recommended when creating a certificate.
- `key_size` - Key size of the certificate in bits. Specifying a strong key size is recommended when creating a certificate.
- `name` - Unique certificate name per SVM or the name of the certificate in AKV, required for downloading AKV certificates. If one is not provided, it is automatically generated.

AKV required properties for downloading a certificate

- `azure.key_vault` - URI of the Azure Key Vault.
- `azure.client_id` - Application (client) ID of the deployed Azure application with appropriate access to an AKV.
- `azure.tenant_id` - Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV.
- `azure.client_secret` - Secret used by the application to prove its identity to AKV.
- `azure.client_certificate` - PKCS12 certificate used by the application to prove its identity to AKV.

AKV optional properties for downloading a certificate

- `azure.oauth_host` - Open authorization server host name.
- `azure.proxy.type` - Type of proxy (http, https etc.) if proxy configuration is used.
- `azure.proxy.host` - Proxy hostname if proxy configuration is used.
- `azure.proxy.port` - Proxy port number if proxy configuration is used.
- `azure.proxy.username` - Proxy username if proxy configuration is used.
- `azure.proxy.password` - Proxy password if proxy configuration is used.
- `azure.timeout` - AKV connection timeout in seconds.
- `azure.verify_host` - Verify the identity of the AKV host name.

Default property values

If not specified in POST, the following default property values are assigned:

- `key_size` - *2048*
- `expiry_time` - *P365DT*
- `hash_function` - *sha256*

Related ONTAP commands

- `security certificate create`
- `security certificate install`
- `security certificate azure-install`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
authority_key_identifier	string	Provides the key identifier of the issuing CA certificate that signed the SSL certificate.
azure	azure	

Name	Type	Description
ca	string	Certificate authority
common_name	string	FQDN or custom common name. Provide on POST when creating a self-signed certificate.
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. Can be provided on POST if creating self-signed certificate. The expiration time range is between 1 day to 10 years.
hash_function	string	Hashing function. Can be provided on POST when creating a self-signed certificate. Hash functions md5 and sha1 are not allowed on POST.
intermediate_certificates	array[string]	Chain of intermediate Certificates in PEM format. Only valid in POST when installing a certificate.
key_size	integer	Key size of requested Certificate in bits. One of 512, 1024, 1536, 2048, 3072. Can be provided on POST if creating self-signed certificate with a minimum permissible value of 2048.
name	string	Certificate name or name of the certificate to be downloaded from the Azure Key Vault (AKV). If not provided in POST, a unique name specific to the SVM is automatically generated.
private_key	string	Private key Certificate in PEM format. Only valid for create when installing a CA-signed certificate. This is not audited.
public_certificate	string	Public key Certificate in PEM format. If this is not provided in POST, a self-signed certificate is created.

Name	Type	Description
serial_number	string	Serial number of certificate.
subject_alternatives	subject_alternatives	
subject_key_identifier	string	Provides the key identifier used to identify the public key in the SSL certificate.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of Certificate. The following types are supported: • client - a certificate and its private key used by an SSL client in ONTAP. • server - a certificate and its private key used by an SSL server in ONTAP. • client_ca - a Certificate Authority certificate used by an SSL server in ONTAP to verify an SSL client certificate. • server_ca - a Certificate Authority certificate used by an SSL client in ONTAP to verify an SSL server certificate. • root_ca - a self-signed certificate used by ONTAP to sign other certificates by acting as a Certificate Authority. • enum: ["client", "server", "client_ca", "server_ca", "root_ca"] • Introduced in: 9.6 • x-nullable: true
uuid	string	Unique ID that identifies a certificate.

Example request


```
{
  "authority_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D7",
  "azure": {
    "client_certificate": "PEM Cert",
    "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
    "client_secret": "abcdef",
    "key_vault": "https://kmip-akv-keyvault.vault.azure.net/",
    "oauth_host": "login.microsoftonline.com",
    "proxy": {
      "host": "proxy.eng.com",
      "password": "proxypassword",
      "port": 1234,
      "type": "string",
      "username": "proxyuser"
    },
    "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
    "timeout": 25
  },
  "ca": "string",
  "common_name": "test.domain.com",
  "expiry_time": "2030-01-25 06:20:13 -0500",
  "hash_function": "string",
  "intermediate_certificates": [
    "-----BEGIN CERTIFICATE-----
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n"
  ],
  "key_size": 512,
  "name": "string",
  "private_key": "-----BEGIN PRIVATE KEY-----\\nprivate-key\\n-----END
PRIVATE KEY-----\\n",
  "public_certificate": "-----BEGIN CERTIFICATE-----
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
```

```
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n",
  "serial_number": "string",
  "subject_alternatives": {
    "dns": [
      "*.example.com"
    ],
    "email": [
      "<a href="mailto:abc@example.com">abc@example.com</a>"
    ],
    "ip": [
      "10.225.34.10"
    ],
    "uri": [
      "http://example.com"
    ]
  },
  "subject_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D8",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```


Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[security_certificate]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "authority_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D7",
      "azure": {
        "client_certificate": "PEM Cert",
        "client_id": "aaaaaaaa-bbbb-aaaa-bbbb-aaaaaaaaaaaa",
        "client_secret": "abcdef",
        "key_vault": "https://kmip-akv-keyvault.vault.azure.net/",
        "oauth_host": "login.microsoftonline.com",
        "proxy": {
          "host": "proxy.eng.com",
          "password": "proxypassword",
          "port": 1234,
          "type": "string",
          "username": "proxyuser"
        },
        "tenant_id": "zzzzzzzz-yyyy-zzzz-yyyy-zzzzzzzzzzzz",
        "timeout": 25
      },
      "ca": "string",
      "common_name": "test.domain.com",
      "expiry_time": "2030-01-25 06:20:13 -0500",
      "hash_function": "string",
      "intermediate_certificates": [
        "-----BEGIN CERTIFICATE-----
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n"
      ],
      "key_size": 512,
      "name": "string",
      "private_key": "-----BEGIN PRIVATE KEY-----\\nprivate-key\\n-----
END PRIVATE KEY-----\\n",
      "public_certificate": "-----BEGIN CERTIFICATE-----
```

```
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n",
      "serial_number": "string",
      "subject_alternatives": {
        "dns": [
          "*.example.com"
        ],
        "email": [
          "<a href="mailto:abc@example.com">abc@example.com</a>"
        ],
        "ip": [
          "10.225.34.10"
        ],
        "uri": [
          "http://example.com"
        ]
      },
      "subject_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D8",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "uuid": "string"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3735645 +	Cannot specify a value for serial. It is generated automatically.
	3735622 +
The certificate type is not supported.	
3735664 +	The specified key size is not supported in FIPS mode.
	3735665 +
The specified hash function is not supported in FIPS mode.	
3735553 +	Failed to create self-signed Certificate.
	3735646 +
Failed to store the certificates.	
3735693 +	The certificate installation failed as private key was empty.
	3735618 +
Cannot accept private key for server_ca or client_ca.	
52363365 +	Failed to allocate memory.
	52559975 +
Failed to read the certificate due to incorrect formatting.	
52363366 +	Unsupported key type.
	52560123 +
Failed to read the key due to incorrect formatting.	
52559972 +	The certificates start date is later than the current date.
	52559976 +
The certificate and private key do not match.	
52559973 +	The certificate has expired.
	52363366 +
Logic error: use of a dead object.	
3735696 +	Intermediate certificates are not supported with client_ca and server_ca type certificates.

Error Code	Description
	52559974 +
The certificate is not supported in FIPS mode.	
3735676 +	Cannot continue the installation without a value for the common name. Since the subject field in the certificate is empty, the field "common_name" must have a value to continue with the installation.
	3735558 +
Failed to extract information about Common Name from the certificate.	
3735588 +	The common name (CN) extracted from the certificate is not valid.
	3735632 +
Failed to extract Certificate Authority Information from the certificate.	
3735700 +	The specified key size is not supported.
	52560173 +
The hash function is not supported for digital signatures.	
3735751 +	Failed to authenticate and fetch the access token from Azure OAuth host.
	3735752 +
Failed to extract the private key from the Azure Key Vault certificate.	3735753 +
Unsupported content_type in the Azure secrets response.	3735754 +
Internal error. Failed to parse the JSON response from Azure Key Vault.	3735755 +
REST call to Azure failed.	3735756 +
Invalid client certificate.	3735757 +
Internal error. Failed to generate client assertion.	3735762 +
Provided Azure Key Vault configuration is incorrect.	3735763 +
Provided Azure Key Vault configuration is incomplete.	3735764 +

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

proxy

Name	Type	Description
host	string	Proxy host.
password	string	Proxy password. Password is not audited.
port	integer	Proxy port.
type	string	Proxy type.
username	string	Proxy username.

azure

Name	Type	Description
client_certificate	string	PKCS12 certificate used by the application to prove its identity to AKV.
client_id	string	Application client ID of the deployed Azure application with appropriate access to an AKV.
client_secret	string	Secret used by the application to prove its identity to AKV.

Name	Type	Description
key_vault	string	URI of the deployed AKV that is used by ONTAP for storing keys. • example: https://kmip-akv-keyvault.vault.azure.net/ • format: uri • x-ntap-createOnly: true • Introduced in: 9.14 • x-nullable: true
oauth_host	string	Open authorization server host name.
proxy	proxy	
tenant_id	string	Directory (tenant) ID of the deployed Azure application with appropriate access to an AKV.
timeout	integer	AKV connection timeout, in seconds. The allowed range is between 0 to 30 seconds.
verify_host	boolean	Verify the identity of the AKV host name. By default, verify_host is set to true.

subject_alternatives

Name	Type	Description
dns	array[string]	A list of DNS names for Subject Alternate name extension.
email	array[string]	A list of email addresses for Subject Alternate name extension
ip	array[string]	A list of IP addresses for Subject Alternate name extension.
uri	array[string]	A list of URIs for Subject Alternate name extension.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_certificate

Name	Type	Description
authority_key_identifier	string	Provides the key identifier of the issuing CA certificate that signed the SSL certificate.
azure	azure	
ca	string	Certificate authority
common_name	string	FQDN or custom common name. Provide on POST when creating a self-signed certificate.
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. Can be provided on POST if creating self-signed certificate. The expiration time range is between 1 day to 10 years.
hash_function	string	Hashing function. Can be provided on POST when creating a self-signed certificate. Hash functions md5 and sha1 are not allowed on POST.
intermediate_certificates	array[string]	Chain of intermediate Certificates in PEM format. Only valid in POST when installing a certificate.

Name	Type	Description
key_size	integer	Key size of requested Certificate in bits. One of 512, 1024, 1536, 2048, 3072. Can be provided on POST if creating self-signed certificate with a minimum permissible value of 2048.
name	string	Certificate name or name of the certificate to be downloaded from the Azure Key Vault (AKV). If not provided in POST, a unique name specific to the SVM is automatically generated.
private_key	string	Private key Certificate in PEM format. Only valid for create when installing a CA-signed certificate. This is not audited.
public_certificate	string	Public key Certificate in PEM format. If this is not provided in POST, a self-signed certificate is created.
serial_number	string	Serial number of certificate.
subject_alternatives	subject_alternatives	
subject_key_identifier	string	Provides the key identifier used to identify the public key in the SSL certificate.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	Type of Certificate. The following types are supported: • client - a certificate and its private key used by an SSL client in ONTAP. • server - a certificate and its private key used by an SSL server in ONTAP. • client_ca - a Certificate Authority certificate used by an SSL server in ONTAP to verify an SSL client certificate. • server_ca - a Certificate Authority certificate used by an SSL client in ONTAP to verify an SSL server certificate. • root_ca - a self-signed certificate used by ONTAP to sign other certificates by acting as a Certificate Authority. • enum: ["client", "server", "client_ca", "server_ca", "root_ca"] • Introduced in: 9.6 • x-nullable: true
uuid	string	Unique ID that identifies a certificate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Sign security certificates

POST `/security/certificates/{ca.uuid}/sign`

Introduced In: 9.6

Signs a certificate.

Required properties

- `signing_request` - Certificate signing request to be signed by the given certificate authority.

Recommended optional properties

- `expiry_time` - Certificate expiration time. Specifying an expiration time for a signed certificate is recommended.
- `hash_function` - Hashing function. Specifying a strong hashing function is recommended when signing a certificate.

Default property values

If not specified in POST, the following default property values are assigned:

- `expiry_time` - *P365DT*
- `hash_function` - *sha256*

Related ONTAP commands

- `security certificate sign`
  This API is used to sign a certificate request using a pre-existing self-signed root certificate. The self-signed root certificate acts as a certificate authority within its scope and maintains the records of its signed certificates.

The root certificate can be created for a given SVM or for the cluster using [`POST security/certificates`].

Parameters

Name	Type	In	Required	Description
ca.uuid	string	path	True	UUID of the existing certificate authority certificate
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. The allowed expiration time range is between 1 day to 10 years.
hash_function	string	Hashing function
signing_request	string	Certificate signing request to be signed by the given certificate authority. Request should be in X509 PEM format.

Example request

```
{
  "expiry_time": "P1DT2H3M4S or '2030-01-25T11:20:13Z'",
  "hash_function": "string",
  "signing_request": "'-----BEGIN CERTIFICATE REQUEST-----
MIICYDCCAUgCAQAwGzEMMAoGA1UEAxMDQUJDMQswCQYDVQQGEwJVUzCCASIwDQYJ
KoZIhvcNAQEBBQADggEPADCCAQoCggEBAPF+82SlqT3Vyu3Jx4IAwHcO5EGwLOxy
zQ6KNjz71Fca0n1/A1CbCPyOsSupGVObvdWxX7xLVMJ2SXb7h43GCqYyX6FXJO4F
HOpmLvB+jxdeiW7SDbiZyLUlsvA+oRO/uNlcug773QZdKLjJD64erZZMRUNbUJB8
bARxAUi0FPvgTraSQ0UW5sRLiGKeAyKA4wekYe1VgjHRTBizFbD4dI3njfva/2Bl
jf+kkulgcLJTuJNtkgeimqMKyraYuleYcYk2K+C//0NuNOuPbDfTXCM7O61vik09
Szi8nLN7OXE9KoAA93U/BCpSfpl8XIb4cGnEr8hgVHOOtZSo+KZBFxMCAwEAAaAA
MA0GCSqGSIb3DQEBCwUAA4IBAQC2vFYpvgsFrm5GnPx8tOBD1xsTyYjbWJMD8hAF
lFrvF9Sw9QGCtDyacxkwgJhQx8l8JiIS5GOY6WWLBl9FMkLQNAhDL9xF3WF7vfYq
RKgrz3bd/Vg96fsRZNYIPLGmoEaqLOh3FOCGc2VbdsR9PwOn3fwthxkIRd6ds6/q
jc5cpSmVsCOgu+OKcpRXikYDbkWXfTZ1AhSfn6njBYFdZ9+PNAu/0JRQh5bX60nO
5heniTcAJLwUZP/CQ8nxHY0Wqy+1rAtM33d5cVmhUlBXQSIru/0ZkA/b9fK5Zv8E
ZMADYUoEvIG59Vxhyci8lzYf+Mxl8qBSF+ZdC4yWhzDqZtM9 -----END CERTIFICATE
REQUEST-----'"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
public_certificate	string	CA signed public key Certificate

Example response

```
{
  "public_certificate": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3735628	Failed to use CA certificate for signing.
3735665	The specified hash function is not supported in FIPS mode.
52559974	The certificate is not supported in FIPS mode.
3735626	Failed to generate signed Certificate.
3735558	Failed to extract information about Common Name from the certificate.
3735588	The common name (CN) extracted from the certificate is not valid.
3735632	Failed to extract Certificate Authority Information from the certificate.
3735629	Failed to sign the certificate because Common Name of signing certificate and Common Name of CA certificate are same.
3735630	Failed to sign the certificate because expiry date of signing certificate exceeds the expiry date of CA certificate.
3735701	Invalid expiration period. The allowed range for expiration time is between 1 and 3652 days.

Definitions

See Definitions

security_certificate_sign

Name	Type	Description
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. The allowed expiration time range is between 1 day to 10 years.
hash_function	string	Hashing function
signing_request	string	Certificate signing request to be signed by the given certificate authority. Request should be in X509 PEM format.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete security certificates

DELETE `/security/certificates/{uuid}`

Introduced In: 9.6

Deletes a security certificate.

Related ONTAP commands

- `security certificate delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Certificate UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3735644	Cannot delete server-chain certificate. Reason: There is a corresponding server certificate for it.
3735679	Cannot delete pre-installed server_ca certificates through REST. Use CLI or ZAPI.
3735650	Deleting this client_ca certificate directly is not supported. Delete the corresponding root-ca certificate using type `root_ca` to delete the root, client, and server certificates.
3735627	Deleting this server_ca certificate directly is not supported. Delete the corresponding root-ca certificate using type `root_ca` to delete the root, client, and server certificates.
3735589	Cannot delete certificate.
3735590	Cannot delete certificate. Failed to remove SSL configuration for the certificate.
3735683	Cannot remove this certificate while external key manager is configured.
3735681	Cannot delete preinstalled `server-ca` certificates. Use the CLI to complete the operation.
52560272	The certificate could not be removed due to being in use by one or more subsystems.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve security certificates

GET `/security/certificates/{uuid}`

Introduced In: 9.6

Retrieves security certificates.

Related ONTAP commands

- `security certificate show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Certificate UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authority_key_identifier	string	Provides the key identifier of the issuing CA certificate that signed the SSL certificate.
azure	azure	
ca	string	Certificate authority
common_name	string	FQDN or custom common name. Provide on POST when creating a self-signed certificate.
expiry_time	string	Certificate expiration time, in ISO 8601 duration format or date and time format. Can be provided on POST if creating self-signed certificate. The expiration time range is between 1 day to 10 years.

Name	Type	Description
hash_function	string	Hashing function. Can be provided on POST when creating a self-signed certificate. Hash functions md5 and sha1 are not allowed on POST.
key_size	integer	Key size of requested Certificate in bits. One of 512, 1024, 1536, 2048, 3072. Can be provided on POST if creating self-signed certificate with a minimum permissible value of 2048.
name	string	Certificate name or name of the certificate to be downloaded from the Azure Key Vault (AKV). If not provided in POST, a unique name specific to the SVM is automatically generated.
public_certificate	string	Public key Certificate in PEM format. If this is not provided in POST, a self-signed certificate is created.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
serial_number	string	Serial number of certificate.
subject_alternatives	subject_alternatives	
subject_key_identifier	string	Provides the key identifier used to identify the public key in the SSL certificate.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	Type of Certificate. The following types are supported: • client - a certificate and its private key used by an SSL client in ONTAP. • server - a certificate and its private key used by an SSL server in ONTAP. • client_ca - a Certificate Authority certificate used by an SSL server in ONTAP to verify an SSL client certificate. • server_ca - a Certificate Authority certificate used by an SSL client in ONTAP to verify an SSL server certificate. • root_ca - a self-signed certificate used by ONTAP to sign other certificates by acting as a Certificate Authority. • enum: ["client", "server", "client_ca", "server_ca", "root_ca"] • Introduced in: 9.6 • x-nullable: true
uuid	string	Unique ID that identifies a certificate.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authority_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D7",
  "azure": {
    "verify_host": true
  },
  "ca": "string",
  "common_name": "test.domain.com",
  "expiry_time": "2030-01-25 06:20:13 -0500",
  "hash_function": "string",
  "key_size": 512,
  "name": "string",
  "public_certificate": "-----BEGIN CERTIFICATE-----
\nMIIBuzCCAWWgAwIBAgIIFTZBrqZwUUMwDQYJKoZIhvcNAQELBQAwHDENMAsGA1UE\nAxM
EVEVTVDELMAkGA1UEBhMCVVMwHhcNMTgwNjA4MTgwOTAxWhcNMTkwNjA4MTgw\nOTAxWjAc
MQ0wCwYDVQQDEwRURVNUMQswCQYDVQQGEwJVUzBcMA0GCSqGSIb3DQEB\nAQUAA0sAMEgCQ
QDaPvbqUJJFJ6NNTyK3Yb+ytSjJ9aa3yUmYTD9uMiP+6ycjxHWB\ne8u9z6yCHsW03ync+d
nhE5c5z8wuDAY0fv15AgMBAAGjgYowgYcwDAYDVR0TBAUw\nAwEB/zALBgNVHQ8EBAMCAQY
wHQYDVR0OBBYEFMJ7Ev/o/3+YNzYh5XNlqqjnw4zm\nMEsGA1UdIwREMEKAFMJ7Ev/o/3+Y
NzYh5XNlqqjnw4zmoSCkHjAcMQ0wCwYDVQQD\nEwRURVNUMQswCQYDVQQGEwJVU4IIFTZBr
qZwUUMwDQYJKoZIhvcNAQELBQADQQAv\nDovYeyGNnknjGI+TVNX6nDbyzf7zUPqnri0Kuv
ObEeybrbPW45sgsnT5dyeE/32U\n9Yr6lklnkBtVBDTmLnrC\n-----END
CERTIFICATE-----\n",
  "scope": "string",
  "serial_number": "string",
  "subject_alternatives": {
    "dns": [
      "*.example.com"
    ],
    "email": [
      "<a href="mailto:abc@example.com">abc@example.com</a>"
    ],
    "ip": [
      "10.225.34.10"
    ],
    "uri": [
      "http://example.com"
    ]
  },
```

```
  "subject_key_identifier":
"26:1F:C5:53:5B:D7:9E:E2:37:74:F4:F4:06:09:03:3D:EB:41:75:D8",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

proxy

azure

Name	Type	Description
proxy	proxy	

subject_alternatives

Name	Type	Description
dns	array[string]	A list of DNS names for Subject Alternate name extension.
email	array[string]	A list of email addresses for Subject Alternate name extension
ip	array[string]	A list of IP addresses for Subject Alternate name extension.
uri	array[string]	A list of URIs for Subject Alternate name extension.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage external-role-mapping entries

Security external-role-mappings endpoint overview

Overview

This API is used to map external identity provider roles to ONTAP roles. The POST request creates an external role to ONTAP role mapping. Various responses are shown in the examples below.

Examples

Creating an external role to ONTAP role mapping entry

The following output shows how to create an external role to ONTAP role mapping entry.

```
# The API
/api/security/external-role-mappings

# The call:
curl -X POST "https://<mgmt-ip>/api/security/external-role-mappings" -d '{
"external_role": "Administrator", "ontap_role": { "name": "admin" },
"provider": "adfs", "comment": "Admin role" }'
```

Retrieving all external role to ONTAP role mapping entries

The following output shows all external role to ONTAP role mapping entries.

```
# The API
/api/security/external-role-mappings

# The call:
curl -X GET "https://<mgmt-ip>/api/security/external-role-mappings"

# The response:
{
 "records": [
 {
   "external_role": "Administrator",
   "provider": "adfs"
 }
 ],
 "num_records": 1
}
```

Retrieve all external-role-mapping entries

GET `/security/external-role-mappings`

Introduced In: 9.16

Retrieves all external-role-mapping entries.

Related ONTAP commands

- `security login external-role-mapping show`

Parameters

Name	Type	In	Required	Description
external_role	string	query	False	Filter by external_role
comment	string	query	False	Filter by comment
provider	string	query	False	Filter by provider
ontap_role.name	string	query	False	Filter by ontap_role.name
timestamp	string	query	False	Filter by timestamp
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[security_external_role_mapping]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "external_role": "string",
      "ontap_role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "provider": "string",
      "timestamp": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

ontap_role

ONTAP role to map with the external identity role.

Name	Type	Description
_links	_links	
name	string	Role name

security_external_role_mapping

Name	Type	Description
_links	self_link	
comment	string	Any comment regarding this external-role-mapping entry.
external_role	string	External Identity provider role.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16

Name	Type	Description
provider	string	Type of the external identity provider.
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an external-role-mapping entry

POST `/security/external-role-mappings`

Introduced In: 9.16

Creates an external-role-mapping entry.

Required properties

- `external_role`
- `provider`
- `ontap_role`

Optional properties

- `comment`

Related ONTAP commands

- `security login external-role-mapping create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	Any comment regarding this external-role-mapping entry.
external_role	string	External Identity provider role.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
provider	string	Type of the external identity provider.
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

Example request

```
{
  "comment": "string",
  "external_role": "string",
  "ontap_role": {
    "name": "admin"
  },
  "provider": "string",
  "timestamp": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[security_external_role_mapping]	

Example response

```
{
  "records": [
    {
      "comment": "string",
      "external_role": "string",
      "ontap_role": {
        "name": "admin"
      },
      "provider": "string",
      "timestamp": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636243	Provided ONTAP role is not configured.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

ontap_role

ONTAP role to map with the external identity role.

Name	Type	Description
name	string	Role name

security_external_role_mapping

Name	Type	Description
comment	string	Any comment regarding this external-role-mapping entry.
external_role	string	External Identity provider role.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
provider	string	Type of the external identity provider.
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an external-role-mapping entry

DELETE `/security/external-role-mappings/{external_role}/{provider}`

Introduced In: 9.16

Deletes an external-role-mapping entry.

Related ONTAP commands

- `security login external-role-mapping delete`

Parameters

Name	Type	In	Required	Description
external_role	string	path	True	
provider	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an external-role-mapping entry

GET `/security/external-role-mappings/{external_role}/{provider}`

Introduced In: 9.16

Retrieves an external-role-mapping entry.

Related ONTAP commands

- `security login external-role-mapping show`

Parameters

Name	Type	In	Required	Description
external_role	string	path	True	External Identity provider role.
provider	string	path	True	Type of the external identity provider.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
comment	string	Any comment regarding this external-role-mapping entry.
external_role	string	External Identity provider role.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
provider	string	Type of the external identity provider.
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "external_role": "string",
  "ontap_role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "provider": "string",
  "timestamp": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

ontap_role

ONTAP role to map with the external identity role.

Name	Type	Description
_links	_links	
name	string	Role name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an external-role-mapping entry

PATCH `/security/external-role-mappings/{external_role}/{provider}`

Introduced In: 9.16

Updates an external-role-mapping entry.

Related ONTAP commands

- `security login external-role-mapping modify`

Parameters

Name	Type	In	Required	Description
external_role	string	path	True	External Identity provider role.
provider	string	path	True	Type of the external identity provider.
fields	array[string]	query	False	Specify the fields to return.

Request Body

Name	Type	Description
comment	string	Any comment regarding this external-role-mapping entry.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

Example request

```
{
  "comment": "string",
  "ontap_role": {
    "name": "admin"
  },
  "timestamp": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
comment	string	Any comment regarding this external-role-mapping entry.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

Example response

```
{
  "comment": "string",
  "ontap_role": {
    "name": "admin"
  },
  "timestamp": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636243	Provided ONTAP role is not configured.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

ontap_role

ONTAP role to map with the external identity role.

Name	Type	Description
name	string	Role name

security_external_role_mapping

Name	Type	Description
comment	string	Any comment regarding this external-role-mapping entry.
ontap_role	ontap_role	ONTAP role to map with the external identity role. • Introduced in: 9.16
timestamp	string	Date and time indicating when this external-role-mapping entry was created.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage Google Cloud KMS

Security gcp-kms endpoint overview

Overview

Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This feature
allows ONTAP to securely protect its encryption keys using Google Cloud KMS.
In order to use Google Cloud KMS with ONTAP, a user must first deploy a Google Cloud application with appropriate access to the Google Cloud KMS and then provide
ONTAP with the necessary details, such as, project ID, key ring name, location, key name and application credentials to allow ONTAP to communicate
with the deployed Google Cloud application.
The properties `state`, `google_reachability` and `ekmip_reachability` are considered advanced properties and are populated only when explicitly requested.

Examples

Enabling GCKMS for an SVM

The following example shows how to enable GCKMS at the SVM-scope. Note the *return_records=true* query parameter is used to obtain the newly created key manager configuration.

```
# The API:
POST /api/security/gcp-kms

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/gcp-kms?return_records=true'
-H 'accept: application/hal+json' -d '{"svm":{"uuid":"f36ff553-e713-11ea-
bd56-005056bb4222" }, "project_id": "testProj",
"key_ring_name":"testKeyRing", "key_ring_location": "global", "key_name":
"key1", "application_credentials": "{\"client_email\":
\"my@account.email.com\", \"private_key\": \"ValidPrivateKey\"}"}'

# The response:
{
"num_records": 1,
"records": [
    {
    "uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
    "svm": {
        "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
        "name": "vs0"
    },
    "project_id": "testProj",
    "key_ring_name": "testKeyRing",
    "key_ring_location": "global",
    "key_name": "key1",
    "_links": {
        "self": {
        "href": "/api/security/gcp-kms/f72098a2-e908-11ea-bd56-
005056bb4222"
            }
        }
    }
]
}
```

Retrieving all GCKMS configurations

The following example shows how to retrieve all GCKMS configurations.

```
# The API:
GET /api/security/gcp-kms

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/gcp-kms?fields=*'

# The response:
{
"records": [
    {
    "uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
    "scope": "svm",
    "svm": {
        "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
        "name": "vs0"
    },
    "project_id": "testProj",
    "key_ring_name": "testKeyRing",
    "key_ring_location": "global",
    "key_name": "key1",
    "_links": {
        "self": {
        "href": "/api/security/gcp-kms/f72098a2-e908-11ea-bd56-
005056bb4222"
        }
    }
    }
],
"num_records": 1,
"_links": {
    "self": {
    "href": "/api/security/gcp-kms?fields=*"
    }
}
}
```

Retrieving a specific GCKMS configuration

The following example shows how to retrieve information for a specific GCKMS configuration.

```
# The API:
GET /api/security/gcp-kms/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222?fields=*'

# The response:
{
"uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
"scope": "svm",
"svm": {
    "uuid": "f36ff553-e713-11ea-bd56-005056bb4222",
    "name": "vs0"
},
"project_id": "testProj",
"key_ring_name": "testKeyRing",
"key_ring_location": "global",
"key_name": "key1",
"_links": {
    "self": {
    "href": "/api/security/gcp-kms/f72098a2-e908-11ea-bd56-005056bb4222"
    }
}
}
```

Retrieving a specific GCKMS's advanced properties

The following example shows how to retrieve advanced properties for a specific GCKMS configuration.

```
# The API:
GET /api/security/gcp-kms/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222?fields=state,google_reachability,ekmip_reachability'

# The response:
{
"uuid": "f72098a2-e908-11ea-bd56-005056bb4222",
"state": {
    "cluster_state": false,
    "message": "The Google Cloud Key Management Service key protection is
```

```
unavailable on the following nodes: cluster1-node1.",
    "code": "65537708"
},
"google_reachability": {
    "reachable": true,
    "message": "",
    "code": "0"
},
"ekmip_reachability": [
    {
    "node": {
        "uuid": "d208115f-7721-11eb-bf83-005056bb150e",
        "name": "node1",
        "_links": {
            "self": {
            "href": "/api/cluster/nodes/d208115f-7721-11eb-bf83-
005056bb150e"
            }
        }
    },
    "reachable": true,
    "message": "",
    "code": "0"
    },
    {
    "node": {
        "uuid": "e208115f-7721-11eb-bf83-005056bb150e",
        "name": "node2",
        "_links": {
            "self": {
            "href": "/api/cluster/nodes/e208115f-7721-11eb-bf83-
005056bb150e"
            }
        }
    },
    "reachable": true,
    "message": "",
    "code": "0"
    }
],
"_links": {
    "self": {
    "href": "/api/security/gcp-kms/f72098a2-e908-11ea-bd56-005056bb4222"
    }
}
}
```

Updating the application credentials of a specific GCKMS configuration

The following example shows how to update the application credentials for a specific GCKMS configuration.

```
# The API:
PATCH /api/security/gcp-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222/' -d '{"application_credentials": "{\"client_email\":
\"new@account.com\", \"private_key\": \"ValidPrivateKey\"}"}'
```

Updating the application credentials and applying a privileged account for impersonation.

The following example shows how to set a privileged account on an existing GCKMS configuration.

```
# The API:
PATCH /api/security/gcp-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222/' -d '{"application_credentials": "{\"client_email\":
\"unprivileged@account.com\", \"private_key\":
\"ValidPrivateKeyforUnprivilegedAccount\"}", "privileged_account":
"privileged@account.com"}'
```

Updating the authentication method to use GCE metadata server for retrieving short lived authentication tokens.

The following example shows how to change the authentication method on an existing GCKMS configuration.

```
# The API:
PATCH /api/security/gcp-kms/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222/' -d '{"authentication_method":
"sa_credentials_attachment"}'
```

Deleting a specific GCKMS configuration

The following example shows how to delete a specific GCKMS configuration.

```
# The API:
DELETE /api/security/gcp-kms/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/gcp-kms/f72098a2-e908-11ea-
bd56-005056bb4222'
```

Restoring keys from a KMIP server

The following example shows how to restore keys for a GCKMS configuration.

```
# The API:
POST /api/security/gcp-kms/{uuid}/restore

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/gcp-kms/33820b57-ec90-11ea-
875e-005056bbf3f0/restore'
```

Retrieve a Google Cloud KMS configurations for all clusters and SVMs

GET `/security/gcp-kms`

Introduced In: 9.9

Retrieves Google Cloud KMS configurations for all clusters and SVMs.

Related ONTAP commands

- `security key-manager external gcp show`
- `security key-manager external gcp check`

Parameters

Name	Type	In	Required	Description
verify_host	boolean	query	False	Filter by verify_host • Introduced in: 9.14

Name	Type	In	Required	Description
key_name	string	query	False	Filter by key_name
state.message	string	query	False	Filter by state.message
state.code	string	query	False	Filter by state.code
state.cluster_state	boolean	query	False	Filter by state.cluster_state
cloudkms_host	string	query	False	Filter by cloudkms_host • Introduced in: 9.14
ekmip_reachability.node.uuid	string	query	False	Filter by ekmip_reachability.node.uuid
ekmip_reachability.node.name	string	query	False	Filter by ekmip_reachability.node.name
ekmip_reachability.message	string	query	False	Filter by ekmip_reachability.message
ekmip_reachability.reachable	boolean	query	False	Filter by ekmip_reachability.reachable
ekmip_reachability.code	string	query	False	Filter by ekmip_reachability.code
oauth_host	string	query	False	Filter by oauth_host • Introduced in: 9.14
proxy_username	string	query	False	Filter by proxy_username
key_ring_location	string	query	False	Filter by key_ring_location

Name	Type	In	Required	Description
proxy_type	string	query	False	Filter by proxy_type
project_id	string	query	False	Filter by project_id
key_ring_name	string	query	False	Filter by key_ring_name
privileged_account	string	query	False	Filter by privileged_account • Introduced in: 9.14
scope	string	query	False	Filter by scope
verify_ip	boolean	query	False	Filter by verify_ip • Introduced in: 9.14
oauth_url	string	query	False	Filter by oauth_url • Introduced in: 9.14
proxy_port	integer	query	False	Filter by proxy_port
google_reachability.code	string	query	False	Filter by google_reachability.code
google_reachability.reachable	boolean	query	False	Filter by google_reachability.reachable
google_reachability.message	string	query	False	Filter by google_reachability.message
port	integer	query	False	Filter by port • Introduced in: 9.14
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
authentication_method	string	query	False	Filter by authentication_method • Introduced in: 9.17
proxy_host	string	query	False	Filter by proxy_host
caller_account	string	query	False	Filter by caller_account • Introduced in: 9.14
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
gce_metadata_server	string	query	False	Filter by gce_metadata_server • Introduced in: 9.17
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[gcp_kms]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_method": "application_credentials_key",
      "caller_account": "<a href="
mailto:myaccount@myproject.com">myaccount@myproject.com</a>",
      "cloudkms_host": "cloudkms.googleapis.com",
      "ekmip_reachability": [
        {
          "code": "346758",
          "message": "embedded KMIP server status unavailable on
node.",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "gce_metadata_server":
"http://169.254.169.254/computeMetadata/v1/instance/service-
accounts/default/token",
      "google_reachability": {
        "code": "346758",
        "message": "Google Cloud KMS is not reachable from all nodes -
<reason>."
```

```
      },
      "key_name": "cryptokey1",
      "key_ring_location": "global",
      "key_ring_name": "gcpapp1-keyring",
      "oauth_host": "oauth2.googleapis.com",
      "oauth_url": "https://oauth2.googleapis.com/token",
      "port": 443,
      "privileged_account": "<a
href="mailto:myserviceaccount@myproject.iam.gserviceaccount.com">myserv
iceaccount@myproject.iam.gserviceaccount.com</a>",
      "project_id": "gcpapp1",
      "proxy_host": "proxy.eng.com",
      "proxy_port": 1234,
      "proxy_type": "http",
      "proxy_username": "proxyuser",
      "scope": "string",
      "state": {
        "code": "346758",
        "message": "Top-level internal key protection key (KEK) is
unavailable on the following nodes with the associated reasons: Node:
node1. Reason: No volumes created yet for the SVM. Wrapped KEK status
will be available after creating encrypted volumes."
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537551	Top-level internal key protection key (KEK) unavailable on one or more nodes.
65537552	Embedded KMIP server status not available.
65537730	The Google Cloud Key Management Service is unreachable from one or more nodes.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ekmip_reachability

Provides the connectivity status for the given SVM on the given node to all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if a given SVM is able to communicate to the EKMIP servers of all of the nodes in the cluster.
message	string	Error message set when cluster-wide EKMIP server availability from the given SVM and node is false.
node	node	

Name	Type	Description
reachable	boolean	Set to true if the given SVM on the given node is able to communicate to all EKMIP servers configured on all nodes in the cluster.

google_reachability

Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if Google Cloud KMS is reachable from all nodes in the cluster.
message	string	Set to the error message when 'reachable' is false.
reachable	boolean	Set to true if the Google Cloud KMS is reachable from all nodes of the cluster.

state

Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_state	boolean	Set to true when Google Cloud KMS key protection is available on all nodes of the cluster.
code	string	Error code corresponding to the status message. Returns 0 if Google Cloud KMS key protection is available in all nodes of the cluster.

Name	Type	Description
message	string	Error message set when top-level internal key protection key (KEK) availability on cluster is false.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

gcp_kms

Name	Type	Description
_links	_links	
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Name	Type	Description
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
key_name	string	Key Identifier of Google Cloud KMS key encryption key.
key_ring_location	string	Google Cloud KMS key ring location.
key_ring_name	string	Google Cloud KMS key ring name of the deployed Google Cloud application.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
project_id	string	Google Cloud project (application) ID of the deployed Google Cloud application that has appropriate access to the Google Cloud KMS.
proxy_host	string	Proxy host name.
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.

Name	Type	Description
proxy_username	string	Proxy username.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a Google Cloud KMS configuration for an SVM

POST `/security/gcp-kms`

Introduced In: 9.9

Configures the Google Cloud KMS configuration for the specified SVM.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create a Google Cloud KMS.
- `project_id` - Google Cloud project (application) ID of the deployed Google Cloud application with appropriate access to the Google Cloud KMS.
- `key_ring_name` - Google Cloud KMS key ring name of the deployed Google Cloud application with appropriate access to the specified Google Cloud KMS.
- `key_ring_location` - Google Cloud KMS key ring location.
- `key_name`- Key Identifier of the Google Cloud KMS key encryption key.
- `application_credentials` - The Google Cloud application's service account credentials required to access the specified KMS. This is a JSON file containing an email address and the private key of the service account holder. The field is required if the `authentication_method` is set to `application_credentials_key`.

Optional properties

- `proxy_type` - Type of proxy (http/https) if proxy configuration is used.
- `proxy_host` - Proxy hostname if proxy configuration is used.
- `proxy_port` - Proxy port number if proxy configuration is used.
- `proxy_username` - Proxy username if proxy configuration is used.
- `proxy_password` - Proxy password if proxy configuration is used.
- `port` - Authorization server and Google Cloud KMS port number.
- `cloudkms_host` - Google Cloud KMS host subdomain.
- `oauth_host` - Open authorization server host name.

- `oauth_url` - Open authorization URL for the access token.
- `privileged_account` - Account used to impersonate Google Cloud KMS requests.
- `verify_ip` - Verify identity of Google Cloud KMS IP address.
- `verify_host` - Verify the identity of the Google Cloud KMS host name.
- `authentication_method` - The authentication method to use for retrieving short lived authentication tokens.
- `gce_metadata_server` - A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Related ONTAP commands

- `security key-manager external gcp enable`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_links	_links	

Name	Type	Description
application_credentials	string	The Google Cloud application's service account credentials required to access the specified KMS. The client_email and private_key fields of the service account holder are required. The credentials are required if the `authentication_method` is set to `application_credentials_key`.
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
key_name	string	Key Identifier of Google Cloud KMS key encryption key.

Name	Type	Description
key_ring_location	string	Google Cloud KMS key ring location.
key_ring_name	string	Google Cloud KMS key ring name of the deployed Google Cloud application.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
project_id	string	Google Cloud project (application) ID of the deployed Google Cloud application that has appropriate access to the Google Cloud KMS.
proxy_host	string	Proxy host name.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.
proxy_username	string	Proxy username.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".

Name	Type	Description
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

Example request


```
{
  "application_credentials": "{\"private_key\":\"ValidPrivateKey\",
\"client_email\":\"<a href="
mailto:my@account.email.com">my@account.email.com</a>\"}",
  "authentication_method": "application_credentials_key",
  "caller_account": "<a href="
mailto:myaccount@myproject.com">myaccount@myproject.com</a>",
  "cloudkms_host": "cloudkms.googleapis.com",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "gce_metadata_server":
"http://169.254.169.254/computeMetadata/v1/instance/service-
accounts/default/token",
  "google_reachability": {
    "code": "346758",
    "message": "Google Cloud KMS is not reachable from all nodes -
<reason>."
  },
  "key_name": "cryptokey1",
  "key_ring_location": "global",
  "key_ring_name": "gcpapp1-keyring",
  "oauth_host": "oauth2.googleapis.com",
  "oauth_url": "https://oauth2.googleapis.com/token",
  "port": 443,
  "privileged_account": "<a
href="mailto:myserviceaccount@myproject.iam.gserviceaccount.com">myserv
iceaccount@myproject.iam.gserviceaccount.com</a>",
  "project_id": "gcpapp1",
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "state": {
    "code": "346758",
```

```
    "message": "Top-level internal key protection key (KEK) is
unavailable on the following nodes with the associated reasons: Node:
node1. Reason: No volumes created yet for the SVM. Wrapped KEK status
will be available after creating encrypted volumes."
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537703	The Google Cloud Key Management Service is not supported for the admin Vserver.
65537704	The Google Cloud Key Management Service is not supported in MetroCluster configurations.
65537706	Internal error. Failed to the encrypt the application credentials.
65537713	Internal Error. Failed to store the application credentials.
65537719	Failed to enable the Google Cloud Key Management Service for SVM [svm-name} because invalid application credentials were provided.
65537720	Failed to configure Google Cloud Key Management Service for SVM [svm-name} because a key manager has already been configured for this SVM. Use the REST API GET method "/api/security/gcp-kms" to view all of the configured key managers.
65537740	The privileged account must be an email address or an empty string.
65537749	The application credentials field must be in valid JSON format.
65539704	The key manager cannot be configured because the SVM has NAE volumes.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

ekmip_reachability

Provides the connectivity status for the given SVM on the given node to all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if a given SVM is able to communicate to the EKMIP servers of all of the nodes in the cluster.
message	string	Error message set when cluster-wide EKMIP server availability from the given SVM and node is false.
node	node	
reachable	boolean	Set to true if the given SVM on the given node is able to communicate to all EKMIP servers configured on all nodes in the cluster.

google_reachability

Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if Google Cloud KMS is reachable from all nodes in the cluster.
message	string	Set to the error message when 'reachable' is false.
reachable	boolean	Set to true if the Google Cloud KMS is reachable from all nodes of the cluster.

state

Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_state	boolean	Set to true when Google Cloud KMS key protection is available on all nodes of the cluster.
code	string	Error code corresponding to the status message. Returns 0 if Google Cloud KMS key protection is available in all nodes of the cluster.
message	string	Error message set when top-level internal key protection key (KEK) availability on cluster is false.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

gcp_kms

Name	Type	Description
_links	_links	
application_credentials	string	The Google Cloud application's service account credentials required to access the specified KMS. The client_email and private_key fields of the service account holder are required. The credentials are required if the `authentication_method` is set to `application_credentials_key`.
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Name	Type	Description
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
key_name	string	Key Identifier of Google Cloud KMS key encryption key.
key_ring_location	string	Google Cloud KMS key ring location.
key_ring_name	string	Google Cloud KMS key ring name of the deployed Google Cloud application.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
project_id	string	Google Cloud project (application) ID of the deployed Google Cloud application that has appropriate access to the Google Cloud KMS.
proxy_host	string	Proxy host name.
proxy_password	string	Proxy password. Password is not audited.

Name	Type	Description
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.
proxy_username	string	Proxy username.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Re-key the external key in the key hierarchy for an SVM

POST `/security/gcp-kms/{gcp_kms.uuid}/rekey-external`

Introduced In: 9.11

Rekeys the external key in the key hierarchy for an SVM with a Google Cloud KMS configuration.

Related ONTAP commands

- `security key-manager external gcp rekey-external`

Parameters

Name	Type	In	Required	Description
gcp_kms.uuid	string	path	True	UUID of the existing Google Cloud KMS configuration.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
key_name	string	Key identifier of the Google Cloud KMS key encryption key.

Example request

```
{
  "key_name": "cryptokey1"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537547	One or more volume encryption keys for encrypted volumes of this data SVM are stored in the key manager configured for the admin SVM. Use the REST API POST method to migrate this data SVM's keys from the admin SVM's key manager to this data SVM's key manager before running the rekey operation.

Error Code	Description
65537556	ONTAP is not able to successfully encrypt or decrypt because the configured external key manager for this SVM is in a blocked state. Possible reasons for a blocked state include the top-level external key protection key not found, disabled or having insufficient privileges.
65537610	Rekey cannot be performed on the SVM while the enabled keystore configuration is being switched. If a previous attempt to switch the keystore configuration failed, or was interrupted, the system will continue to prevent rekeying for the SVM. Use the REST API PATCH method "/api/security/key-stores/{uuid}" to re-run and complete the operation.
65537721	Google Cloud KMS is not configured for the given SVM.
65537729	External rekey failed on one or more nodes. Use the REST API POST method "/api/security/gcp-kms/{uuid}/rekey-external" to try the rekey operation again.
65539436	Rekey cannot be performed on the SVM while the enabled keystore configuration is being initialized. Wait until the keystore is in the active state, and rerun the rekey operation.
65539437	Rekey cannot be performed on the SVM while the enabled keystore configuration is being disabled.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

gcp_kms_key

Name	Type	Description
key_name	string	Key identifier of the Google Cloud KMS key encryption key.

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a Google Cloud KMS configuration

DELETE `/security/gcp-kms/{uuid}`

Introduced In: 9.9

Deletes a Google Cloud KMS configuration.

Related ONTAP commands

- `security key-manager external gcp disable`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Google Cloud KMS UUID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536817	Internal error. Failed to determine if it is safe to disable key manager.
65536827	Internal error. Failed to determine if the given SVM has any encrypted volumes.
65536834	Internal error. Failed to get existing key-server details for the given SVM.
65536867	Volume encryption keys (VEK) for one or more encrypted volumes are stored on the key manager configured for the given SVM.
65536883	Internal error. Volume encryption key is missing for a volume.
65536884	Internal error. Volume encryption key is invalid for a volume.
65537721	The Google Cloud Key Management Service is not configured for the SVM.
196608080	One or more nodes in the cluster have the root volume encrypted using NVE (NetApp Volume Encryption).
196608301	Internal error. Failed to get encryption type.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the Google Cloud KMS configuration

GET `/security/gcp-kms/{uuid}`

Introduced In: 9.9

Retrieves the Google Cloud KMS configuration for the SVM specified by the UUID.

Related ONTAP commands

- `security key-manager external gcp show`
- `security key-manager external gcp check`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Google Cloud KMS UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Name	Type	Description
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
key_name	string	Key Identifier of Google Cloud KMS key encryption key.
key_ring_location	string	Google Cloud KMS key ring location.
key_ring_name	string	Google Cloud KMS key ring name of the deployed Google Cloud application.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
project_id	string	Google Cloud project (application) ID of the deployed Google Cloud application that has appropriate access to the Google Cloud KMS.
proxy_host	string	Proxy host name.
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.
proxy_username	string	Proxy username.

Name	Type	Description
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_method": "application_credentials_key",
  "caller_account": "<a href="
mailto:myaccount@myproject.com">myaccount@myproject.com</a>",
  "cloudkms_host": "cloudkms.googleapis.com",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "gce_metadata_server":
"http://169.254.169.254/computeMetadata/v1/instance/service-
accounts/default/token",
  "google_reachability": {
    "code": "346758",
    "message": "Google Cloud KMS is not reachable from all nodes -
<reason>."
  },
  "key_name": "cryptokey1",
  "key_ring_location": "global",
  "key_ring_name": "gcpapp1-keyring",
  "oauth_host": "oauth2.googleapis.com",
  "oauth_url": "https://oauth2.googleapis.com/token",
  "port": 443,
  "privileged_account": "<a
href="mailto:myserviceaccount@myproject.iam.gserviceaccount.com">myserv
iceaccount@myproject.iam.gserviceaccount.com</a>",
  "project_id": "gcpapp1",
  "proxy_host": "proxy.eng.com",
```

```
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "state": {
    "code": "346758",
    "message": "Top-level internal key protection key (KEK) is
unavailable on the following nodes with the associated reasons: Node:
node1. Reason: No volumes created yet for the SVM. Wrapped KEK status
will be available after creating encrypted volumes."
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537551	Top-level internal key protection key (KEK) unavailable on one or more nodes.
65537552	Embedded KMIP server status not available.
65537730	The Google Cloud Key Management Service is unreachable from one or more nodes.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ekmip_reachability

Provides the connectivity status for the given SVM on the given node to all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if a given SVM is able to communicate to the EKMIP servers of all of the nodes in the cluster.
message	string	Error message set when cluster-wide EKMIP server availability from the given SVM and node is false.
node	node	
reachable	boolean	Set to true if the given SVM on the given node is able to communicate to all EKMIP servers configured on all nodes in the cluster.

google_reachability

Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if Google Cloud KMS is reachable from all nodes in the cluster.
message	string	Set to the error message when 'reachable' is false.
reachable	boolean	Set to true if the Google Cloud KMS is reachable from all nodes of the cluster.

state

Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_state	boolean	Set to true when Google Cloud KMS key protection is available on all nodes of the cluster.
code	string	Error code corresponding to the status message. Returns 0 if Google Cloud KMS key protection is available in all nodes of the cluster.
message	string	Error message set when top-level internal key protection key (KEK) availability on cluster is false.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the Google Cloud KMS configuration

PATCH `/security/gcp-kms/{uuid}`

Introduced In: 9.9

Updates the Google Cloud KMS configuration.

Optional properties

- `application_credentials` - New credentials used to verify the application's identity to the Google Cloud KMS.
- `proxy_type` - Type of proxy (http/https) if proxy configuration is used.
- `proxy_host` - Proxy hostname if proxy configuration is used.
- `proxy_port` - Proxy port number if proxy configuration is used.

- `port` - Authorization server and Google Cloud KMS port number.
- `proxy_username` - Proxy username if proxy configuration is used.
- `proxy_password` - Proxy password if proxy configuration is used.
- `project_id` - Google Cloud project (application) ID of the deployed Google Cloud application with appropriate access to the Google Cloud KMS.
- `key_ring_name` - Google Cloud KMS key ring name of the deployed Google Cloud application with appropriate access to the specified Google Cloud KMS.
- `key_ring_location` - Google Cloud KMS key ring location.
- `cloudkms_host` - Google Cloud KMS host subdomain.
- `oauth_host` - Open authorization server host name.
- `oauth_url` - Open authorization URL for the access token.
- `verify_host` - Verify the identity of the Google Cloud KMS host name.
- `verify_ip ` - Verify identity of Google Cloud KMS IP address.
- `privileged_account` - Account used to impersonate Google Cloud KMS requests.
- `authentication_method` - The authentication method to use for retrieving short lived authentication tokens.
- `gce_metadata_server` - A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Related ONTAP commands

- `security key-manager external gcp update-credentials`
- `security key-manager external gcp update-config`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Google Cloud KMS UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_links	_links	
application_credentials	string	The Google Cloud application's service account credentials required to access the specified KMS. The client_email and private_key fields of the service account holder are required. The credentials are required if the `authentication_method` is set to `application_credentials_key`.

Name	Type	Description
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
proxy_host	string	Proxy host name.

Name	Type	Description
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.
proxy_username	string	Proxy username.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

Example request


```
{
  "application_credentials": "{\"private_key\":\"ValidPrivateKey\",
\"client_email\":\"<a href="
mailto:my@account.email.com">my@account.email.com</a>\"}",
  "authentication_method": "application_credentials_key",
  "caller_account": "<a href="
mailto:myaccount@myproject.com">myaccount@myproject.com</a>",
  "cloudkms_host": "cloudkms.googleapis.com",
  "ekmip_reachability": [
    {
      "code": "346758",
      "message": "embedded KMIP server status unavailable on node.",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "gce_metadata_server":
"http://169.254.169.254/computeMetadata/v1/instance/service-
accounts/default/token",
  "google_reachability": {
    "code": "346758",
    "message": "Google Cloud KMS is not reachable from all nodes -
<reason>."
  },
  "oauth_host": "oauth2.googleapis.com",
  "oauth_url": "https://oauth2.googleapis.com/token",
  "port": 443,
  "privileged_account": "<a
href="mailto:myserviceaccount@myproject.iam.gserviceaccount.com">myserv
iceaccount@myproject.iam.gserviceaccount.com</a>",
  "proxy_host": "proxy.eng.com",
  "proxy_password": "proxypassword",
  "proxy_port": 1234,
  "proxy_type": "http",
  "proxy_username": "proxyuser",
  "scope": "string",
  "state": {
    "code": "346758",
    "message": "Top-level internal key protection key (KEK) is
unavailable on the following nodes with the associated reasons: Node:
node1. Reason: No volumes created yet for the SVM. Wrapped KEK status
will be available after creating encrypted volumes."
```

```
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537541	No inputs were provided for the patch request.
65537547	One or more volume encryption keys for encrypted volumes of this data SVM are stored in the key manager configured for the admin SVM. Use the REST API POST method to migrate this data SVM's keys from the admin SVM's key manager to this data SVM's key manager before running the rekey operation.
65537605	Failed to establish connectivity with the cloud key management service.
65537713	Internal Error. Failed to store the application credentials.
65537714	The "application_credentials" field must be specified.
65537721	The Google Cloud Key Management Service is not configured for the SVM.
65537724	Failed to update the Google Cloud Key Management Service because invalid application credentials were provided.
65537732	ONTAP 9.9.1 does not allow modification of the following fields, "project_id", "key_ring_name" and "key_ring_location".

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

ekmip_reachability

Provides the connectivity status for the given SVM on the given node to all EKMIP servers configured on all nodes of the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if a given SVM is able to communicate to the EKMIP servers of all of the nodes in the cluster.
message	string	Error message set when cluster-wide EKMIP server availability from the given SVM and node is false.
node	node	
reachable	boolean	Set to true if the given SVM on the given node is able to communicate to all EKMIP servers configured on all nodes in the cluster.

google_reachability

Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
code	string	Code corresponding to the error message. Returns a 0 if Google Cloud KMS is reachable from all nodes in the cluster.
message	string	Set to the error message when 'reachable' is false.
reachable	boolean	Set to true if the Google Cloud KMS is reachable from all nodes of the cluster.

state

Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_state	boolean	Set to true when Google Cloud KMS key protection is available on all nodes of the cluster.
code	string	Error code corresponding to the status message. Returns 0 if Google Cloud KMS key protection is available in all nodes of the cluster.
message	string	Error message set when top-level internal key protection key (KEK) availability on cluster is false.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

gcp_kms

Name	Type	Description
_links	_links	
application_credentials	string	The Google Cloud application's service account credentials required to access the specified KMS. The client_email and private_key fields of the service account holder are required. The credentials are required if the `authentication_method` is set to `application_credentials_key`.
authentication_method	string	Google Cloud KMS authentication method.
caller_account	string	Google Cloud KMS caller account email
cloudkms_host	string	Google Cloud KMS host subdomain.
ekmip_reachability	array[ekmip_reachability]	
gce_metadata_server	string	A custom metadata server URL used for retrieving short lived authentication tokens if the default service account is not used. This is only applicable when the `authentication_method` is set to `sa_credentials_attachment`.

Name	Type	Description
google_reachability	google_reachability	Indicates whether or not the Google Cloud KMS is reachable from all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
oauth_host	string	Open authorization server host name.
oauth_url	string	Open authorization URL for the access token.
port	integer	Authorization server and Google Cloud KMS port number.
privileged_account	string	Google Cloud KMS account to impersonate.
proxy_host	string	Proxy host name.
proxy_password	string	Proxy password. Password is not audited.
proxy_port	integer	Proxy port number.
proxy_type	string	Type of proxy.
proxy_username	string	Proxy username.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".

Name	Type	Description
state	state	Google Cloud Key Management Services is a cloud key management service (KMS) that provides a secure store for encryption keys. This object indicates whether or not the Google Cloud KMS key protection is available on all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
uuid	string	A unique identifier for the Google Cloud KMS.
verify_host	boolean	Verify the identity of the Google Cloud KMS host name.
verify_ip	boolean	Verify the identity of the Google Cloud KMS IP address.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Re-key the internal key in the key hierarchy for an SVM

POST `/security/gcp-kms/{uuid}/rekey-internal`

Introduced In: 9.10

Rekeys the internal key in the key hierarchy for an SVM with a Google Cloud KMS configuration.

Related ONTAP commands

- `security key-manager external gcp rekey-internal`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the existing Google Cloud KMS configuration.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537547	One or more volume encryption keys for encrypted volumes of this data SVM are stored in the key manager configured for the admin SVM. Use the REST API POST method to migrate this data SVM's keys from the admin SVM's key manager to this data SVM's key manager before running the rekey operation.
65537556	ONTAP is not able to successfully encrypt or decrypt because the configured external key manager for this SVM is in a blocked state. Possible reasons for a blocked state include the top-level external key protection key not found, disabled or having insufficient privileges.
65537559	There are no existing internal keys for the SVM. A rekey operation is allowed for an SVM with one or more encryption keys.
65537610	Rekey cannot be performed on the SVM while the enabled keystore configuration is being switched. If a previous attempt to switch the keystore configuration failed, or was interrupted, the system will continue to prevent rekeying for the SVM. Use the REST API PATCH method "/api/security/key-stores/{uuid}" to re-run and complete the operation.
65537721	Google Cloud KMS is not configured for the given SVM.

Error Code	Description
65539436	Rekey cannot be performed on the SVM while the enabled keystore configuration is being initialized. Wait until the keystore is in the active state, and rerun the rekey operation.
65539437	Rekey cannot be performed on the SVM while the enabled keystore configuration is being disabled.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Restore keys for an SVM from a Google Cloud KMS

POST `/security/gcp-kms/{uuid}/restore`

Introduced In: 9.10

Restores the keys for an SVM from a configured Google Cloud KMS.

Related ONTAP commands

- `security key-manager external gcp restore`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the existing Google Cloud KMS configuration.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537544	Missing wrapped top-level internal key protection key (KEK) from internal database.
65537721	The Google Cloud Key Management Service is not configured for the given SVM.
65537722	Failed to restore keys on the following nodes.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage group-to-role mapping entries

Security group role-mappings endpoint overview

Overview

This API is used to manage and map groups to ONTAP roles. The POST request creates a group to role mapping. Various responses are shown in the examples below.

+

Examples

Creating a group to role mapping entry

The following output shows how to create a group to role mapping entry.

```
# The API:
/api/security/group/role-mappings

# The call:
curl -X POST "https://<mgmt-ip>/api/security/group/role-mappings" -d '{
"group_id": 1, "ontap_role": { "name": "admin" }, "comment": "Group1 admin
role"}'
```

Retrieving all group to role mapping entries

The following output shows all group to role mapping entries.

```
# The API:
/api/security/group/role-mappings

# The call:
curl -X GET "https://<mgmt-ip>/api/security/group/role-mappings"

# The response:
{
 "records": [
 {
   "group_id": 1,
   "ontap_role": {
     "name": "admin"
   }
 }
 ],
 "num_records": 1
}
```

Retrieve all group-to-role mapping entries

GET `/security/group/role-mappings`

Introduced In: 9.16

Retrieves all the group to role mapping entries.

Related ONTAP commands

- `security login group role-mapping show`

Parameters

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope
group_id	integer	query	False	Filter by group_id • Max value: 4294967295 • Min value: 1
ontap_role.name	string	query	False	Filter by ontap_role.name
comment	string	query	False	Filter by comment
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[group_role_mappings]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "next": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "group_id": 1,
      "ontap_role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "scope": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ontap_role

Role name.

Name	Type	Description
_links	_links	
name	string	Role name

group_role_mappings

Name	Type	Description
_links	_links	
comment	string	Any comment regarding this group entry.
group_id	integer	Group ID.
ontap_role	ontap_role	Role name.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a group-to-role mapping entry

POST `/security/group/role-mappings`

Introduced In: 9.16

Creates a group to role mapping entry.

Required properties

- `group_id`
- `ontap_role`

Optional properties

- `comment`

Related ONTAP commands

- `security login group role-mapping create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	Any comment regarding this group entry.
group_id	integer	Group ID.
ontap_role	ontap_role	Role name.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "comment": "string",
  "group_id": 1,
  "ontap_role": {
    "name": "admin"
  },
  "scope": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[group_role_mappings]	

Example response

```
{
  "records": [
    {
      "comment": "string",
      "group_id": 1,
      "ontap_role": {
        "name": "admin"
      },
      "scope": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636242	The configured group ID does not exist in the group configuration.
5636243	The configured role name does not exist in the SVM where the group ID is configured.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ontap_role

Role name.

Name	Type	Description
name	string	Role name

group_role_mappings

Name	Type	Description
comment	string	Any comment regarding this group entry.
group_id	integer	Group ID.
ontap_role	ontap_role	Role name.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Delete a group-to-role mapping entry

DELETE `/security/group/role-mappings/{group_id}/{ontap_role.name}`

Introduced In: 9.16

Deletes a group to role mapping entry.

Related ONTAP commands

- `security login group role-mapping delete`

Parameters

Name	Type	In	Required	Description
group_id	integer	path	True	Group ID. • format: int64 • Max value: 4294967295 • Min value: 1
ontap_role.name	string	path	True	Role name.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a group-to-role mapping entry

GET `/security/group/role-mappings/{group_id}/{ontap_role.name}`

Introduced In: 9.16

Retrieves a group to role mapping entry.

Related ONTAP commands

- `security login group role-mapping show`

Parameters

Name	Type	In	Required	Description
group_id	integer	path	True	Group ID. • format: int64 • Max value: 4294967295 • Min value: 1
ontap_role.name	string	path	True	Role name.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	Any comment regarding this group entry.
group_id	integer	Group ID.
ontap_role	ontap_role	Role name.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "group_id": 1,
  "ontap_role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "scope": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ontap_role

Role name.

Name	Type	Description
_links	_links	
name	string	Role name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Update a configured group role-mapping entry

PATCH `/security/group/role-mappings/{group_id}/{ontap_role.name}`

Introduced In: 9.16

Updates a configured group role-mapping.

Related ONTAP commands

- `security login group role-mapping modify`

Parameters

Name	Type	In	Required	Description
group_id	integer	path	True	Group ID. • format: int64 • Max value: 4294967295 • Min value: 1
ontap_role.name	string	path	True	Role name.

Request Body

Name	Type	Description
comment	string	Any comment regarding this group entry.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "comment": "string",
  "scope": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ontap_role

Role name.

Name	Type	Description
name	string	Role name

group_role_mappings

Name	Type	Description
comment	string	Any comment regarding this group entry.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage group configurations

Security groups endpoint overview

Overview

This API is used to manage group configurations in ONTAP. The POST request creates a group configuration. Various responses are shown in the examples below.
+

Examples

Creating a group configuration

The following output shows how to create a group configuration.

```
# The API:
/api/security/groups

# The call:
curl -X POST "https://<mgmt-ip>/api/security/groups"  -d '{ "name":
"AzureGroup1", "owner": { "name": "C1_sti213-vsim-sr023a_1718680001",
"uuid": "116127b1-2d21-11ef-a5e1-005056ae1bc2" }, "type": "entra", "uuid":
"3fa85f64-5717-4562-b3fc-2c963f66afa6", "comment": "Azure Group"}'
```

Retrieving all group configurations

The following output shows all group configurations.

```
# The API:
/api/security/groups

# The call:
curl -X GET "https://<mgmt-ip>/api/security/groups"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "116127b1-2d21-11ef-a5e1-005056ae1bc2",
      "name": "C1_sti213-vsim-sr023a_1718680001"
    },
    "name": "AzureGroup1",
    "type": "entra",
    "id": 1,
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"
  }
],
"num_records": 1
}
```

Retrieve all group entries

GET `/security/groups`

Introduced In: 9.16

Retrieves all group entries.

Related ONTAP commands

- `security login group show`

Parameters

Name	Type	In	Required	Description
type	string	query	False	Filter by type
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
create_time	string	query	False	Filter by create_time
scope	string	query	False	Filter by scope
name	string	query	False	Filter by name • maxLength: 64 • minLength: 1
comment	string	query	False	Filter by comment
id	integer	query	False	Filter by id
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[security_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "Azure Group",
      "create_time": "string",
      "id": 0,
      "name": "AzureGroup1",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string",
      "type": "entra",
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

owner

Group owner. Used to identify a cluster or an SVM.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_group

Name	Type	Description
_links	self_link	
comment	string	Any comment regarding this group entry.

Name	Type	Description
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.
name	string	Group name.
owner	owner	Group owner. Used to identify a cluster or an SVM.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
type	string	Group type.
uuid	string	Group UUID from external Active Directory.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a group entry

POST `/security/groups`

Introduced In: 9.16

Creates a group entry.

Required properties

- `name`

Optional properties

- `owner`
- `type`
- `uuid`
- `comment`

Related ONTAP commands

- `security login group create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	Any comment regarding this group entry.
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.
name	string	Group name.

Name	Type	Description
owner	owner	Group owner. Used to identify a cluster or an SVM.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
type	string	Group type.
uuid	string	Group UUID from external Active Directory.

Example request

```
{
  "comment": "Azure Group",
  "create_time": "string",
  "id": 0,
  "name": "AzureGroup1",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "type": "entra",
  "uuid": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[security_group]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "comment": "Azure Group",
      "create_time": "string",
      "id": 0,
      "name": "AzureGroup1",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string",
      "type": "entra",
      "uuid": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636231	Failed to create the group because the maximum number of allowed group IDs has been reached.
5636232	The group name does not satisfy the length requirement.
5636235	Duplicate UUID.
5636244	Failed to delete the group because it is part of the group role mapping configuration.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

owner

Group owner. Used to identify a cluster or an SVM.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_group

Name	Type	Description
comment	string	Any comment regarding this group entry.
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.
name	string	Group name.
owner	owner	Group owner. Used to identify a cluster or an SVM.

Name	Type	Description
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
type	string	Group type.
uuid	string	Group UUID from external Active Directory.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a group entry

DELETE `/security/groups/{owner.uuid}/{name}/{type}`

Introduced In: 9.16

Deletes a group entry.

Related ONTAP commands

- `security login group delete`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
name	string	path	True	
type	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636244	The group is part of the role mapping configuration. Delete the mapping first and then delete the group.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a group entry

GET `/security/groups/{owner.uuid}/{name}/{type}`

Introduced In: 9.16

Retrieves a group entry.

Related ONTAP commands

- `security login group show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Group owner. Used to identify a cluster or an SVM.
name	string	path	True	Group name.
type	string	path	True	Group type.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
comment	string	Any comment regarding this group entry.
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.
name	string	Group name.
owner	owner	Group owner. Used to identify a cluster or an SVM.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
type	string	Group type.
uuid	string	Group UUID from external Active Directory.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "Azure Group",
  "create_time": "string",
  "id": 0,
  "name": "AzureGroup1",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "type": "entra",
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

owner

Group owner. Used to identify a cluster or an SVM.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update configured group information

PATCH `/security/groups/{owner.uuid}/{name}/{type}`

Introduced In: 9.16

Updates configured group information.

Related ONTAP commands

- `security login group modify`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Group owner. Used to identify a cluster or an SVM.
name	string	path	True	Group name.
type	string	path	True	Group type.

Request Body

Name	Type	Description
comment	string	Any comment regarding this group entry.
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.

Name	Type	Description
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
uuid	string	Group UUID from external Active Directory.

Example request

```
{
  "comment": "Azure Group",
  "create_time": "string",
  "id": 0,
  "scope": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636235	Duplicate UUID.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

_links

owner

Group owner. Used to identify a cluster or an SVM.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_group

Name	Type	Description
comment	string	Any comment regarding this group entry.
create_time	string	Date and time indicating when this group entry was created.
id	integer	Group ID which is unique per group across the system. It is a read-only field and it automatically assigns the next available unique number.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
uuid	string	Group UUID from external Active Directory.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and update IPsec configuration

Security IPsec endpoint overview

Overview

The following operations are supported:

- GET to retrieve the IPsec status: GET security/ipsec
- Patch to update IPsec status: PATCH security/ipsec

Retrieve an IPsec configuration

GET `/security/ipsec`

Introduced In: 9.8

Retrieves IPsec configuration via REST APIs.

Related ONTAP commands

- 'security ipsec config show'

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
enabled	boolean	Indicates whether or not IPsec is enabled.
offload_enabled	boolean	Indicates whether or not IPsec hardware offload is enabled.
replay_window	integer	Replay window size in packets, where 0 indicates that the relay window is disabled.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "replay_window": 0
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an IPsec configuration

PATCH `/security/ipsec`

Introduced In: 9.8

Updates IPsec configuration via REST APIs.

Optional properties

- 'enabled' - Enable IPsec.
- 'replay_window' - Replay window size in packets.
- 'offload_enabled' - Enable IPsec hardware offload.

Related ONTAP commands

- 'security ipsec config modify'

Request Body

Name	Type	Description
enabled	boolean	Indicates whether or not IPsec is enabled.
offload_enabled	boolean	Indicates whether or not IPsec hardware offload is enabled.
replay_window	integer	Replay window size in packets, where 0 indicates that the relay window is disabled.

Example request

```
{
  "replay_window": 0
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66256898	Internal error. Failed to enable IPsec.
66256899	Internal error. Failed to disable IPsec.
66256913	Offload setting changes are not allowed when IPsec is enabled.
66256915	Anti-replay protection and IPsec offload cannot be operational at the same time.
66257007	Failed to update replay window size.

Error Code	Description
66257199	IPsec is not supported in the current cluster version.
66257496	IPsec must be enabled to support BGP peer groups with MD5. Disable MD5 first in the BGP peer group.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

ipsec

Manages IPsec configuration via REST APIs.

Name	Type	Description
enabled	boolean	Indicates whether or not IPsec is enabled.
offload_enabled	boolean	Indicates whether or not IPsec hardware offload is enabled.
replay_window	integer	Replay window size in packets, where 0 indicates that the relay window is disabled.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage IPsec security certificates

Security IPsec ca-certificates endpoint overview

Overview

The following APIs can be used to add/remove/retrieve the IPsec CA certificates:

- Creation Post: POST security/ipsec/ca-certificates
- Collection Get: GET security/ipsec/ca-certificates
- Instance Get: GET security/ipsec/ca-certificates/{certificate.uuid}
- Instance Delete: DELETE security/ipsec/ca-certificates/{certificate.uuid}

Retrieve IPsec CA certificates configured for the cluster and all SVMs

GET `/security/ipsec/ca-certificates`

Introduced In: 9.10

Retrieves the collection of IPsec CA certificates configured for cluster and all SVMs.

Related ONTAP commands

- `security ipsec ca-certificate show`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
certificate.uuid	string	query	False	Filter by certificate.uuid
scope	string	query	False	Filter by scope
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[ipsec_ca_certificate]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scope": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

certificate

IPsec CA certificate UUID

Name	Type	Description
_links	_links	
uuid	string	Certificate UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipsec_ca_certificate

Name	Type	Description
certificate	certificate	IPsec CA certificate UUID
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a CA certificate to IPsec

POST `/security/ipsec/ca-certificates`

Introduced In: 9.10

Add CA certificate to IPsec. The CA certificate should already be installed on the cluster prior to adding them to IPsec.
The CA certificate can be installed on the cluster using the /security/certificates endpoint.
The svm.uuid or svm.name should not be supplied for certificates that have a scope of cluster.

Related ONTAP commands

- `security ipsec ca-certificate add`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
certificate	certificate	IPsec CA certificate UUID
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "certificate": {
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[ipsec_ca_certificate]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "certificate": {
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66257304	CA certificate is not installed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

IPsec CA certificate UUID

Name	Type	Description
uuid	string	Certificate UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipsec_ca_certificate

Name	Type	Description
certificate	certificate	IPsec CA certificate UUID
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a CA certificate with the specified UUID from IPsec

DELETE `/security/ipsec/ca-certificates/{certificate.uuid}`

Introduced In: 9.10

Deletes the IPsec CA certificate with the specified UUID from IPsec.

Related ONTAP commands

- `security ipsec ca-certificate remove`

Parameters

Name	Type	In	Required	Description
certificate.uuid	string	path	True	UUID of the CA certificate to be deleted from IPsec.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66257298	CA certificate is not installed for IPsec.
66257303	The CA certificate cannot be removed from IPsec because it is not installed.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a CA certificate configured for IPpsec

GET `/security/ipsec/ca-certificates/{certificate.uuid}`

Introduced In: 9.10

Retrieves a specific CA certificate configured for IPsec.

Related ONTAP commands

- `security ipsec ca-certificate show`

Parameters

Name	Type	In	Required	Description
certificate.uuid	string	path	True	UUID of the IPsec CA certificate.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
certificate	certificate	IPsec CA certificate UUID
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

certificate

IPsec CA certificate UUID

Name	Type	Description
_links	_links	
uuid	string	Certificate UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage IPsec policies

Security IPsec policies endpoint overview

Overview

The following operations are supported:

- Collection Get: GET security/ipsec/policies
- Creation Post: POST security/ipsec/policies
- Instance Get: GET security/ipsec/policies/uuid
- Instance Patch: PATCH security/ipsec/policies/uuid
- Instance Delete: DELETE security/ipsec/policies/uuid

Retrieve IPsec policies

GET `/security/ipsec/policies`

Introduced In: 9.8

Retrieves the collection of IPsec policies.

Related ONTAP commands

- `security ipsec policy show`

Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
ipspace.name	string	query	False	Filter by ipspace.name

Name	Type	In	Required	Description
ipspace.uuid	string	query	False	Filter by ipspace.uuid
remote_identity	string	query	False	Filter by remote_identity
authentication_method	string	query	False	Filter by authentication_method • Introduced in: 9.10
protocol	string	query	False	Filter by protocol
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled
certificate.uuid	string	query	False	Filter by certificate.uuid • Introduced in: 9.10
certificate.name	string	query	False	Filter by certificate.name • Introduced in: 9.10
name	string	query	False	Filter by name • maxLength: 64 • minLength: 1
scope	string	query	False	Filter by scope
ppk.identity	string	query	False	Filter by ppk.identity • Introduced in: 9.17 • maxLength: 64 • minLength: 6

Name	Type	In	Required	Description
action	string	query	False	Filter by action • Introduced in: 9.15
local_identity	string	query	False	Filter by local_identity
remote_endpoint.family	string	query	False	Filter by remote_endpoint.family
remote_endpoint.netmask	string	query	False	Filter by remote_endpoint.netmask
remote_endpoint.port	string	query	False	Filter by remote_endpoint.port
remote_endpoint.address	string	query	False	Filter by remote_endpoint.address
local_endpoint.family	string	query	False	Filter by local_endpoint.family
local_endpoint.netmask	string	query	False	Filter by local_endpoint.netmask
local_endpoint.port	string	query	False	Filter by local_endpoint.port
local_endpoint.address	string	query	False	Filter by local_endpoint.address
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "action": "string",
      "authentication_method": "string",
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ipspace": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "local_endpoint": {
        "address": "10.10.10.7",
```

```
        "family": "string",
        "netmask": "24",
        "port": "23"
      },
      "local_identity": "string",
      "name": "string",
      "ppk": {
        "identity": "string"
      },
      "protocol": "17",
      "remote_endpoint": {
        "address": "10.10.10.7",
        "family": "string",
        "netmask": "24",
        "port": "23"
      },
      "remote_identity": "string",
      "scope": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

certificate

Certificate for the IPsec policy.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

local_endpoint

Local endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

ppk

Post-quantum pre-shared key information.

Name	Type	Description
identity	string	Post-quantum pre-shared key identity.

remote_endpoint

Remote endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

records

IPsec policy object.

Name	Type	Description
action	string	Action for the IPsec policy.
authentication_method	string	Authentication method for the IPsec policy.
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
name	string	IPsec policy name.
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	Unique identifier of the IPsec policy.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an IPsec policy

POST `/security/ipsec/policies`

Introduced In: 9.8

Creates an IPsec policy.

Related ONTAP commands

- `security ipsec policy create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
action	string	Action for the IPsec policy.
authentication_method	string	Authentication method for the IPsec policy.
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
name	string	IPsec policy name.
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.

Name	Type	Description
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
secret_key	string	Pre-shared key for IKE negotiation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	Unique identifier of the IPsec policy.

Example request

```
{
  "action": "string",
  "authentication_method": "string",
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ipspace": {
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_endpoint": {
    "address": "10.10.10.7",
    "netmask": "24",
    "port": "23"
  },
  "local_identity": "string",
  "name": "string",
  "ppk": {
    "identity": "string",
    "shared_key": "string"
  },
  "protocol": "17",
  "remote_endpoint": {
    "address": "10.10.10.7",
    "netmask": "24",
    "port": "23"
  },
  "remote_identity": "string",
  "secret_key": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "action": "string",
      "authentication_method": "string",
      "certificate": {
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ipspace": {
        "name": "Default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "local_endpoint": {
        "address": "10.10.10.7",
        "netmask": "24",
        "port": "23"
      },
      "local_identity": "string",
      "name": "string",
      "ppk": {
        "identity": "string",
        "shared_key": "string"
      },
      "protocol": "17",
      "remote_endpoint": {
        "address": "10.10.10.7",
        "netmask": "24",
        "port": "23"
      },
      "remote_identity": "string",
      "secret_key": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66257099	Only one protocol can be specified.
66257100	Only one local port can be specified.
66257101	Only one remote port can be specified.
66257102	Internet Key Exchange version 1 (IKEv1) is not supported.
66257104	IPsec policy with same name already exists in this SVM.
66257107	The specified pre-shared key is not a valid hexadecimal string.
66257109	The specified pre-shared key is not a valid Base64 encoded binary string.
66257110	Failed to a create policy sequencing value.
66257112	The IPsec policy with the action specified does not provide packet protection and the authentication method provided for the policy will be ignored.
66257113	Only one local IP subnet can be specified.
66257114	Only one remote IP subnet can be specified.
66257115	Port ranges containing more than one port are not supported.
66257117	IPsec is not supported on the SVM specified in the policy, IPsec is supported on data SVMs only.
66257120	The subnet selector must be a host address (An IPv4 address with a 32-bit netmask or an IPv6 address with a 128-bit netmask).
66257121	The maximum limit of IPsec policies has been reached for the specified SVM.
66257125	The local_endpoint.address must be specified with local_endpoint.netmask.

Error Code	Description
66257126	The remote_endpoint.address must be specified with remote_endpoint.netmask.
66257127	The local subnet must be configured as a non-zero subnet.
66257128	Invalid ANY wildcard subnet.
66257129	A specific local or remote port number is required when the remote subnet is configured as an ANY wildcard subnet.
66257130	The maximum limit of IPsec policies has been reached for the cluster.
66257131	ESP in UDPv6 Encapsulation is not supported.
66257132	Invalid value for port field. Value should be in range <0-65535>.
66257133	A pre-shared key is needed for the PSK authentication method. Use the secret_key option to specify a key.
66257134	An end-entity certificate is needed for the PKI authentication method. Use the certificate.uuid option to specify an end-entity certificate.
66257135	The specified certificate is not found on the SVM.
66257136	A certificate is not needed for the PSK authentication method.
66257137	A pre-shared key is not needed for the PKI authentication method.
66257138	Remote identity is required when using certificate verification.
66257139	Certificate with the specified UUID was not found.
66257140	Only certificates with a client or server type are supported.
66257142	Failed to create IPsec policy because the specified SVM is being migrated.
66257143	Invalid IPsec policy provided. The subnet must be non-empty.
66257144	The IPsec policy actions ESP TRANSPORT and ESP UDP each provide packet protection and requires a secret key or certificate for authentication.
66257148	The policy name does not meet required ASCII-range characters length.
66257153	The policy requires a post-quantum pre-shared key because ppk-identity is specified for this policy.

Error Code	Description
66257154	The policy requires a post-quantum pre-shared identity because ppk-shared-key is specified for this policy.
66257199	Not all of the nodes in the cluster are running a version that supports the IPsec feature.
66257200	The shared key does not meet required ASCII-range characters length.
66257201	Support for the feature available with effective cluster version or later.
66257202	The specified SVM name is invalid.
66257203	The specified SVM UUID is invalid.
66257204	The specified IPspace UUID and IPspace name refer to different IPspaces.
66257205	The specified SVM must exist in the specified IPspace.
66257305	The certificate UUID does not match the provided certificate name.
66257396	IPsec is not supported for the admin SVM in a MetroCluster configuration.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

Certificate for the IPsec policy.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

local_endpoint

Local endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

ppk

Post-quantum pre-shared key information.

Name	Type	Description
identity	string	Post-quantum pre-shared key identity.
shared_key	string	Post-quantum pre-shared key.

remote_endpoint

Remote endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipsec_policy

IPsec policy object.

Name	Type	Description
action	string	Action for the IPsec policy.
authentication_method	string	Authentication method for the IPsec policy.

Name	Type	Description
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
name	string	IPsec policy name.
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
secret_key	string	Pre-shared key for IKE negotiation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	Unique identifier of the IPsec policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

records

IPsec policy object.

Name	Type	Description
action	string	Action for the IPsec policy.
authentication_method	string	Authentication method for the IPsec policy.
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
name	string	IPsec policy name.
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity

Name	Type	Description
secret_key	string	Pre-shared key for IKE negotiation.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	Unique identifier of the IPsec policy.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an IPsec policy

DELETE `/security/ipsec/policies/{uuid}`

Introduced In: 9.8

Deletes a specific IPsec policy.

Related ONTAP commands

- `security ipsec policy delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPsec policy UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66257096	Internal error. Failed to purge connections associated with the IPsec policy.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an IPsec policy

GET `/security/ipsec/policies/{uuid}`

Introduced In: 9.8

Retrieves a specific IPsec policy.

Related ONTAP commands

- `security ipsec policy show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPsec policy UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
action	string	Action for the IPsec policy.
authentication_method	string	Authentication method for the IPsec policy.
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
ipspace	ipspace	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
name	string	IPsec policy name.
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	Unique identifier of the IPsec policy.

Example response


```
{
  "action": "string",
  "authentication_method": "string",
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "Default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_endpoint": {
    "address": "10.10.10.7",
    "family": "string",
    "netmask": "24",
    "port": "23"
  },
  "local_identity": "string",
  "name": "string",
  "ppk": {
    "identity": "string"
  },
  "protocol": "17",
  "remote_endpoint": {
    "address": "10.10.10.7",
    "family": "string",
    "netmask": "24",
    "port": "23"
  },
  "remote_identity": "string",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
```

```
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

certificate

Certificate for the IPsec policy.

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
_links	_links	
name	string	IPspace name
uuid	string	IPspace UUID

local_endpoint

Local endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

ppk

Post-quantum pre-shared key information.

Name	Type	Description
identity	string	Post-quantum pre-shared key identity.

remote_endpoint

Remote endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an IPsec policy

PATCH `/security/ipsec/policies/{uuid}`

Introduced In: 9.8

Updates a specific IPsec policy.

Related ONTAP commands

- `security ipsec policy modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPsec policy UUID

Request Body

Name	Type	Description
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.
local_identity	string	Local Identity
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
uuid	string	Unique identifier of the IPsec policy.

Example request

```
{
  "certificate": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_endpoint": {
    "address": "10.10.10.7",
    "netmask": "24",
    "port": "23"
  },
  "local_identity": "string",
  "ppk": {
    "identity": "string"
  },
  "protocol": "17",
  "remote_endpoint": {
    "address": "10.10.10.7",
    "netmask": "24",
    "port": "23"
  },
  "remote_identity": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66257097	Internal error. Failed to update the IPsec policy.
66257099	Only one protocol can be specified.
66257100	Only one local port can be specified.
66257101	Only one remote port can be specified.

Error Code	Description
66257110	Failed to create a policy sequencing value.
66257113	Only one local IP subnet can be specified.
66257114	Only one remote IP subnet can be specified.
66257115	Port ranges containing more than one port are not supported.
66257120	The subnet selector must be a host address (An IPv4 address with a 32-bit netmask or an IPv6 address with a 128-bit netmask).
66257125	The local_endpoint.address must be specified with local_endpoint.netmask.
66257126	The remote_endpoint.address must be specified with remote_endpoint.netmask.
66257127	The local subnet must be configured as a non-zero subnet.
66257128	Invalid ANY wildcard subnet.
66257129	A specific local or remote port number is required when the remote subnet is configured as an ANY wildcard subnet.
66257131	ESP in UDPv6 Encapsulation is not supported.
66257135	The specified certificate is not found on the SVM.
66257136	A certificate is not needed for the PSK authentication method.
66257138	Remote identity is required when using certificate verification.
66257139	Certificate with the specified UUID was not found.
66257140	Only certificates with a client or server type are supported.
66257142	Failed to create IPsec policy because the specified SVM is being migrated.
66257143	Invalid IPsec policy provided. The subnet must be non-empty.
66257153	The policy requires a post-quantum pre-shared key because ppk-identity is specified for this policy.
66257154	The policy requires a post-quantum pre-shared identity because ppk-shared-key is specified for this policy.
66257199	Not all of the nodes in the cluster are running a version that supports the IPsec feature.
66257200	The shared key does not meet required ASCII-range characters length.

Error Code	Description
66257201	Support for the feature available with effective cluster version or later.
66257305	The certificate UUID does not match the provided certificate name.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

certificate

Certificate for the IPsec policy.

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

Name	Type	Description
name	string	IPspace name
uuid	string	IPspace UUID

local_endpoint

Local endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

ppk

Post-quantum pre-shared key information.

Name	Type	Description
identity	string	Post-quantum pre-shared key identity.

remote_endpoint

Remote endpoint for the IPsec policy.

Name	Type	Description
address	string	IPv4 or IPv6 address
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always the netmask length.
port	string	Application port to be covered by the IPsec policy

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

ipsec_policy

IPsec policy object.

Name	Type	Description
certificate	certificate	Certificate for the IPsec policy.
enabled	boolean	Indicates whether or not the policy is enabled.
local_endpoint	local_endpoint	Local endpoint for the IPsec policy.

Name	Type	Description
local_identity	string	Local Identity
ppk	ppk	Post-quantum pre-shared key information.
protocol	string	Lower layer protocol to be covered by the IPsec policy.
remote_endpoint	remote_endpoint	Remote endpoint for the IPsec policy.
remote_identity	string	Remote Identity
uuid	string	Unique identifier of the IPsec policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View IPsec security associations

Security IPsec security-associations endpoint overview

Overview

- Collection Get: GET security/ipsec/security-associations

- Instance Get: GET security/ipsec/security-associations/uuid

Retrieve IPsec and IKE security associations

GET `/security/ipsec/security-associations`

Introduced In: 9.8

Retrieves the IPsec and IKE (Internet Key Exchange) security associations.

Related ONTAP commands

- `security ipsec show-ipsecsa`
- `security ipsec show-ikesa`

Parameters

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
local_address	string	query	False	Filter by local_address
ike.version	integer	query	False	Filter by ike.version
ike.state	string	query	False	Filter by ike.state
ike.initiator_security_parameter_index	string	query	False	Filter by ike.initiator_security_parameter_index
ike.responder_security_parameter_index	string	query	False	Filter by ike.responder_security_parameter_index
ike.is_initiator	boolean	query	False	Filter by ike.is_initiator
ike.authentication	string	query	False	Filter by ike.authentication

Name	Type	In	Required	Description
ipsec.outbound.offload_packets	integer	query	False	Filter by ipsec.outbound.offload_packets • Introduced in: 9.16
ipsec.outbound.packets	integer	query	False	Filter by ipsec.outbound.packets
ipsec.outbound.offload_bytes	integer	query	False	Filter by ipsec.outbound.offload_bytes • Introduced in: 9.16
ipsec.outbound.security_parameter_index	string	query	False	Filter by ipsec.outbound.security_parameter_index
ipsec.outbound.bytes	integer	query	False	Filter by ipsec.outbound.bytes
ipsec.state	string	query	False	Filter by ipsec.state
ipsec.inbound.bytes	integer	query	False	Filter by ipsec.inbound.bytes
ipsec.inbound.security_parameter_index	string	query	False	Filter by ipsec.inbound.security_parameter_index
ipsec.inbound.offload_bytes	integer	query	False	Filter by ipsec.inbound.offload_bytes • Introduced in: 9.16
ipsec.inbound.packets	integer	query	False	Filter by ipsec.inbound.packets

Name	Type	In	Required	Description
ipsec.inbound.offload_packets	integer	query	False	Filter by ipsec.inbound.offload_packets • Introduced in: 9.16
ipsec.action	string	query	False	Filter by ipsec.action
cipher_suite	string	query	False	Filter by cipher_suite
policy_name	string	query	False	Filter by policy_name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
type	string	query	False	Filter by type
remote_address	string	query	False	Filter by remote_address
lifetime	integer	query	False	Filter by lifetime
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "cipher_suite": "string",
      "ike": {
        "authentication": "string",
        "initiator_security_parameter_index": "string",
        "responder_security_parameter_index": "string",
        "state": "string"
      },
      "ipsec": {
        "action": "string",
        "inbound": {
          "security_parameter_index": "string"
        },
        "outbound": {
          "security_parameter_index": "string"
        },
        "state": "string"
      },
      "local_address": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "policy_name": "string",
        "remote_address": "string",
        "scope": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "type": "string",
        "uuid": "string"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

ike

Objects containing parameters specific to IKE (Internet Key Exchange) security association.

Name	Type	Description
authentication	string	Authentication method for internet key exchange protocol.
initiator_security_parameter_index	string	Initiator's security parameter index for the IKE security association.
is_initiator	boolean	Indicates whether or not IKE has been initiated by this node.

Name	Type	Description
responder_security_parameter_index	string	Responder's security parameter index for the IKE security association.
state	string	State of the IKE connection.
version	integer	Internet key exchange protocol version.

inbound

Status for inbound parameters for the IPsec security association.

Name	Type	Description
bytes	integer	Number of inbound bytes for the IPsec security association.
offload_bytes	integer	Number of inbound bytes processed by offload for the IPsec security association.
offload_packets	integer	Number of inbound packets processed by offload for the IPsec security association.
packets	integer	Number of inbound packets for the IPsec security association.
security_parameter_index	string	Inbound security parameter index for the IPSec security association.

outbound

Status for outbound parameters for the IPsec security association.

Name	Type	Description
bytes	integer	Number of outbound bytes for the IPsec security association.
offload_bytes	integer	Number of outbound bytes processed by offload for the IPsec security association.

Name	Type	Description
offload_packets	integer	Number of outbound packets processed by offload for the IPsec security association.
packets	integer	Number of outbound packets for the IPsec security association.
security_parameter_index	string	Outbound security parameter index for the IPSec security association.

ipsec

Objects containing parameters specific to IPsec security association.

Name	Type	Description
action	string	Action for the IPsec security association.
inbound	inbound	Status for inbound parameters for the IPsec security association.
outbound	outbound	Status for outbound parameters for the IPsec security association.
state	string	State of the IPsec security association.

_links

Name	Type	Description
self	href	

node

Node with the security association.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

records

Security association object for IPsec security association and IKE (Internet Key Exchange) security association.

Name	Type	Description
cipher_suite	string	Cipher suite for the security association.
ike	ike	Objects containing parameters specific to IKE (Internet Key Exchange) security association.
ipsec	ipsec	Objects containing parameters specific to IPsec security association.
lifetime	integer	Lifetime for the security association in seconds.
local_address	string	Local address of the security association.
node	node	Node with the security association.
policy_name	string	Policy name for the security association.
remote_address	string	Remote address of the security association.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of security association, it can be IPsec or IKE (Internet Key Exchange).
uuid	string	Unique identifier of the security association.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an IPsec or IKE security association

GET `/security/ipsec/security-associations/{uuid}`

Introduced In: 9.8

Retrieves a specific IPsec or IKE (Internet Key Exchange) security association.

Related ONTAP commands

- `security ipsec show-ipsecsa`
- `security ipsec show-ikesa`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of IPsec or IKE security association.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
cipher_suite	string	Cipher suite for the security association.
ike	ike	Objects containing parameters specific to IKE (Internet Key Exchange) security association.
ipsec	ipsec	Objects containing parameters specific to IPsec security association.
lifetime	integer	Lifetime for the security association in seconds.
local_address	string	Local address of the security association.
node	node	Node with the security association.
policy_name	string	Policy name for the security association.
remote_address	string	Remote address of the security association.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of security association, it can be IPsec or IKE (Internet Key Exchange).
uuid	string	Unique identifier of the security association.

Example response


```
{
  "cipher_suite": "string",
  "ike": {
    "authentication": "string",
    "initiator_security_parameter_index": "string",
    "responder_security_parameter_index": "string",
    "state": "string"
  },
  "ipsec": {
    "action": "string",
    "inbound": {
      "security_parameter_index": "string"
    },
    "outbound": {
      "security_parameter_index": "string"
    },
    "state": "string"
  },
  "local_address": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "policy_name": "string",
  "remote_address": "string",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

ike

Objects containing parameters specific to IKE (Internet Key Exchange) security association.

Name	Type	Description
authentication	string	Authentication method for internet key exchange protocol.
initiator_security_parameter_index	string	Initiator's security parameter index for the IKE security association.
is_initiator	boolean	Indicates whether or not IKE has been initiated by this node.
responder_security_parameter_index	string	Responder's security parameter index for the IKE security association.
state	string	State of the IKE connection.
version	integer	Internet key exchange protocol version.

inbound

Status for inbound parameters for the IPsec security association.

Name	Type	Description
bytes	integer	Number of inbound bytes for the IPsec security association.
offload_bytes	integer	Number of inbound bytes processed by offload for the IPsec security association.
offload_packets	integer	Number of inbound packets processed by offload for the IPsec security association.
packets	integer	Number of inbound packets for the IPsec security association.

Name	Type	Description
security_parameter_index	string	Inbound security parameter index for the IPSec security association.

outbound

Status for outbound parameters for the IPsec security association.

Name	Type	Description
bytes	integer	Number of outbound bytes for the IPsec security association.
offload_bytes	integer	Number of outbound bytes processed by offload for the IPsec security association.
offload_packets	integer	Number of outbound packets processed by offload for the IPsec security association.
packets	integer	Number of outbound packets for the IPsec security association.
security_parameter_index	string	Outbound security parameter index for the IPSec security association.

ipsec

Objects containing parameters specific to IPsec security association.

Name	Type	Description
action	string	Action for the IPsec security association.
inbound	inbound	Status for inbound parameters for the IPsec security association.
outbound	outbound	Status for outbound parameters for the IPsec security association.
state	string	State of the IPsec security association.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Node with the security association.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage JIT privilege user configurations

Security jit-privilege-users endpoint overview

Overview

This API is used to create, retrieve, and delete relevant information related to user-specific JIT privilege session configurations.
Prerequisites:
You must create a user that has a JIT supported login method configured on the SVM that you want to create the elevated session configurations.

Examples

Creating the JIT session configuration for a user

```
# The API:
POST "/api/security/jit-privilege-users"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/jit-privilege-
users?return_records=true" -H "accept: application/hal+json" -d '{
"owner": { "name": "Cserver"} , "account": { "name": "joe"},
"application": "ssh","role": {"name": "admin"},"session_validity":
"PT30M","jit_validity": "PT2H10M20S"}'

# The response:
{}
```

Retrieving the configured JIT privilege sessions for users

Retrieves the JIT privilege user session configurations or a filtered list (for a specific SVM, user, etc).

```
# The API:
GET "/api/security/jit-privilege-users"

# The call:
curl -X GET  "https://<mgmt-ip>/api/security/jit-privilege-users" -H
"accept: application/hal+json"

# The response:
{
  "records": [
    {
      "owner": {
        "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
        "name": "Cserver",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
          }
        }
      },
      "account": {
        "name": "testUser"
      },
      "application": "ssh",
        "_links": {
          "self": {
            "href": "/api/security/jit-privilege-users/b009a9e7-4081-b576-
7575-ada21efcaf16/testUser/ssh"
          }
        }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/security/jit-privilege-users"
    }
  }
}
```

Retrieve the JIT privilege user configurations for an SVM

GET `/security/jit-privilege-users`

Introduced In: 9.17

Retrieves the JIT privilege user configurations for an SVM.

Related ONTAP commands

- `security jit-privilege user show`

Parameters

Name	Type	In	Required	Description
end_time	string	query	False	Filter by end_time
comment	string	query	False	Filter by comment
jit_state	string	query	False	Filter by jit_state
role.name	string	query	False	Filter by role.name
application	string	query	False	Filter by application
start_time	string	query	False	Filter by start_time
session_validity	string	query	False	Filter by session_validity
account.name	string	query	False	Filter by account.name
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
jit_validity	string	query	False	Filter by jit_validity
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[security_jit_privilege_user]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "account": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "joe.smith"
      },
      "application": "string",
      "comment": "Comment text",
      "end_time": "2024-11-08 06:15:31 -0500",
      "jit_state": "active",
      "jit_validity": "P90D",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "session_validity": "PT1H",
      "start_time": "2024-11-08 05:15:31 -0500"
```

```
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

account_reference

The name of the user.

Name	Type	Description
_links	_links	
name	string	User account

owner

Owner name and UUID that uniquely identifies the JIT settings for a user.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

The role the user will be elevated to.

Name	Type	Description
_links	_links	
name	string	Role name

security_jit_privilege_user

Name	Type	Description
account	account_reference	The name of the user.
application	string	The name of the application.
comment	string	The description of the elevation rule.
end_time	string	The end date and time of the JIT privilege session in UTC.
jit_state	string	The current status of the rule: preactive, idle, or active.
jit_validity	string	The JIT validity period on this SVM for this user.
owner	owner	Owner name and UUID that uniquely identifies the JIT settings for a user.
role	role	The role the user will be elevated to.
session_validity	string	The session validity period on this SVM for this user.
start_time	string	The start date and time of the JIT privilege session in UTC.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create JIT privilege user configurations for an SVM

POST `/security/jit-privilege-users`

Introduced In: 9.17

Creates the JIT privilege user configurations for an SVM.

Required properties

- `owner.uuid` - Account owner UUID.
- `account.name` - User name.
- `application` - Application

Related ONTAP commands

- `security jit-privilege user create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
account	account_reference	The name of the user.
application	string	The name of the application.

Name	Type	Description
comment	string	The description of the elevation rule.
end_time	string	The end date and time of the JIT privilege session in UTC.
jit_state	string	The current status of the rule: preactive, idle, or active.
jit_validity	string	The JIT validity period on this SVM for this user.
owner	owner	Owner name and UUID that uniquely identifies the JIT settings for a user.
role	role	The role the user will be elevated to.
session_validity	string	The session validity period on this SVM for this user.
start_time	string	The start date and time of the JIT privilege session in UTC.

Example request

```
{
  "account": {
    "name": "joe.smith"
  },
  "application": "string",
  "comment": "Comment text",
  "end_time": "2024-11-08 06:15:31 -0500",
  "jit_state": "active",
  "jit_validity": "P90D",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "role": {
    "name": "admin"
  },
  "session_validity": "PT1H",
  "start_time": "2024-11-08 05:15:31 -0500"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[security_jit_privilege_user]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "account": {
        "name": "joe.smith"
      },
      "application": "string",
      "comment": "Comment text",
      "end_time": "2024-11-08 06:15:31 -0500",
      "jit_state": "active",
      "jit_validity": "P90D",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "role": {
        "name": "admin"
      },
      "session_validity": "PT1H",
      "start_time": "2024-11-08 05:15:31 -0500"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

account_reference

The name of the user.

Name	Type	Description
name	string	User account

owner

Owner name and UUID that uniquely identifies the JIT settings for a user.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

The role the user will be elevated to.

Name	Type	Description
name	string	Role name

security_jit_privilege_user

Name	Type	Description
account	account_reference	The name of the user.
application	string	The name of the application.
comment	string	The description of the elevation rule.

Name	Type	Description
end_time	string	The end date and time of the JIT privilege session in UTC.
jit_state	string	The current status of the rule: preactive, idle, or active.
jit_validity	string	The JIT validity period on this SVM for this user.
owner	owner	Owner name and UUID that uniquely identifies the JIT settings for a user.
role	role	The role the user will be elevated to.
session_validity	string	The session validity period on this SVM for this user.
start_time	string	The start date and time of the JIT privilege session in UTC.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete JIT privilege user configurations for an SVM

DELETE `/security/jit-privilege-users/{owner.uuid}/{account.name}/{application}`

Introduced In: 9.17

Deletes the JIT privilege user configurations for an SVM.

Related ONTAP commands

- `security jit-privilege user delete`

Required properties

- `owner.uuid`
- `application`
- `account.name`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
account.name	string	path	True	
application	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the JIT privilege user configurations for an SVM

GET `/security/jit-privilege-users/{owner.uuid}/{account.name}/{application}`

Introduced In: 9.17

Retrieves the JIT privilege user configurations for an SVM.

Related ONTAP commands

- `security jit-privilege user show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM
account.name	string	path	True	The username.
application	string	path	True	The name of the application.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
account	account_reference	The name of the user.
application	string	The name of the application.
comment	string	The description of the elevation rule.
end_time	string	The end date and time of the JIT privilege session in UTC.
jit_state	string	The current status of the rule: preactive, idle, or active.
jit_validity	string	The JIT validity period on this SVM for this user.

Name	Type	Description
owner	owner	Owner name and UUID that uniquely identifies the JIT settings for a user.
role	role	The role the user will be elevated to.
session_validity	string	The session validity period on this SVM for this user.
start_time	string	The start date and time of the JIT privilege session in UTC.

Example response


```
{
  "account": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "joe.smith"
  },
  "application": "string",
  "comment": "Comment text",
  "end_time": "2024-11-08 06:15:31 -0500",
  "jit_state": "active",
  "jit_validity": "P90D",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "session_validity": "PT1H",
  "start_time": "2024-11-08 05:15:31 -0500"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

account_reference

The name of the user.

Name	Type	Description
_links	_links	
name	string	User account

owner

Owner name and UUID that uniquely identifies the JIT settings for a user.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role

The role the user will be elevated to.

Name	Type	Description
_links	_links	
name	string	Role name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage global JIT privilege configurations

Security jit-privileges endpoint overview

Overview

This API is used to retrieve and configure relevant information related to the Global JIT (Just In Time) privilege configuration in the cluster.

Examples

Retrieving the configured JIT privilege settings for the cluster

Retrieves the JIT privileges for the cluster or a filtered list (for a specific SVM).

```
# The API:
GET "/api/security/jit-privileges"

# The call
curl -k https://<mgmt-ip>/api/security/jit-privileges

# the response:
{
"records": [
{
  "owner": {
    "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
    "name": "Cserver",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
      }
    }
  },
  "application": "ssh",
  "_links": {
    "self": {
      "href": "/api/security/jit-privileges/b009a9e7-4081-b576-7575-
ada21efcaf16/ssh"
    }
  }
}
]
}
```

Retrieve global JIT privilege configurations for an SVM

GET `/security/jit-privileges`

Introduced In: 9.17

Retrieves global JIT privilege configurations on an SVM.

Related ONTAP commands

- `security jit-privilege show`

Parameters

Name	Type	In	Required	Description
application	string	query	False	Filter by application

Name	Type	In	Required	Description
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
default_session_validity_period	string	query	False	Filter by default_session_validity_period
max_jit_validity_period	string	query	False	Filter by max_jit_validity_period
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[security_jit_privilege]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "application": "string",
      "default_session_validity_period": "PT1H",
      "max_jit_validity_period": "P90D",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

Owner name and UUID that uniquely identifies the JIT privilege global settings.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_jit_privilege

Name	Type	Description
_links	_links	
application	string	The name of the application.
default_session_validity_period	string	The default session validity period on this SVM.
max_jit_validity_period	string	The maximum JIT validity period allowed on this SVM.

Name	Type	Description
owner	owner	Owner name and UUID that uniquely identifies the JIT privilege global settings.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve JIT privilege configurations for an SVM

GET `/security/jit-privileges/{owner.uuid}/{application}`

Introduced In: 9.17

Retrieves the JIT privilege configurations for an SVM.

Related ONTAP commands

- `security jit-privilege show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
application	string	path	True	Application name.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
application	string	The name of the application.
default_session_validity_period	string	The default session validity period on this SVM.
max_jit_validity_period	string	The maximum JIT validity period allowed on this SVM.
owner	owner	Owner name and UUID that uniquely identifies the JIT privilege global settings.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "application": "string",
  "default_session_validity_period": "PT1H",
  "max_jit_validity_period": "P90D",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

Owner name and UUID that uniquely identifies the JIT privilege global settings.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Modify JIT privilege configurations for an SVM

PATCH `/security/jit-privileges/{owner.uuid}/{application}`

Introduced In: 9.17

Modifies the JIT privilege configurations for an SVM.

Related ONTAP commands

- `security jit-privilege modify`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
application	string	path	True	Application name.

Request Body

Name	Type	Description
default_session_validity_period	string	The default session validity period on this SVM.
max_jit_validity_period	string	The maximum JIT validity period allowed on this SVM.

Example request

```
{
  "default_session_validity_period": "PT1H",
  "max_jit_validity_period": "P90D"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
default_session_validity_period	string	The default session validity period on this SVM.
max_jit_validity_period	string	The maximum JIT validity period allowed on this SVM.

Example response

```
{
  "default_session_validity_period": "PT1H",
  "max_jit_validity_period": "P90D"
}
```

Error

```
Status: Default, Error
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

Owner name and UUID that uniquely identifies the JIT privilege global settings.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_jit_privilege

Name	Type	Description
default_session_validity_period	string	The default session validity period on this SVM.
max_jit_validity_period	string	The maximum JIT validity period allowed on this SVM.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View and update key manager configurations

Security key-manager-configs endpoint overview

Overview

Retrieves or modifies the key management configuration options. The following operations are supported:

- GET
- PATCH

Examples

Retrieving cluster-level key manager configurations

The following example shows how to retrieve cluster-level manager configurations.

```
# The API:
GET /api/security/key-manager-configs

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-manager-configs' -H
'accept: application/hal+json'

# The response:
{
"cc_mode_enabled": false,
"health_monitor_polling_interval": 15,
"cloud_kms_retry_count": 3,
"health_monitor_policy": {
  "akv": {
    "enabled": true,
    "manage_volume_offline": true
  },
  "gcp": {
    "enabled": true,
    "manage_volume_offline": true
  },
  "aws": {
    "enabled": true,
    "manage_volume_offline": true
  },
  "ikp": {
    "enabled": true,
    "manage_volume_offline": true
  },
  "okm": {
    "enabled": true,
    "manage_volume_offline": true
  },
  "kmip": {
    "enabled": true,
    "manage_volume_offline": true
  }
},
"_links": {
  "self": {
    "href": "/api/security/key-manager-configs"
  }
}
}
```

Updating the cluster-level key manager configurations

The following example shows how to modify the "health_monitor_polling_interval" and "cloud_kms_retry_count" fields.

```
# The API:
PATCH /api/security/key-manager-configs

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-manager-configs' -H
'accept: application/hal+json' -d "{ \"health_monitor_polling_interval\" :
\"20\", \"cloud_kms_retry_count\" : \"5\" }"
```

Updating the cluster-level key manager configurations

The following example shows how to modify the "cc_mode" and "passphrase" fields.

```
# The API:
PATCH /api/security/key-manager-configs

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-manager-configs' -H
'accept: application/hal+json' -d "{ \"cc_mode_enabled\" : \"true\",
\"passphrase\": \"current_passphrase\" }"
```

Shows the keystore level health monitor policy

The following example shows how to retrieve the health monitor policies for Amazon Web Services and Google Cloud.

```
# The API:
GET /api/security/key-manager-configs

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-manager-
configs?fields=health_monitor_policy.aws,health_monitor_policy.gcp' -H
'accept: application/hal+json'

# The response:
{
"health_monitor_policy": {
  "gcp": {
    "enabled": false,
    "manage_volume_offline": false
  },
  "aws": {
    "enabled": false,
    "manage_volume_offline": false
  }
},
"_links": {
  "self": {
    "href": "/api/security/key-manager-configs"
  }
}
}
```

Updates the keytore level health monitor policy

The following example shows how to modify the Amazon Web Services "enabled" field and the Google Cloud "manage_volume_offline" field of the health monitor policy.

```
# The API:
PATCH /api/security/key-manager-configs

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-manager-configs' -H
'accept: application/hal+json' -d '{"health_monitor_policy": {"aws":
{"enabled": "false"}, "gcp": {"manage_volume_offline": "false"}}}'
```

Retrieve key manager configurations

GET `/security/key-manager-configs`

Introduced In: 9.10

Retrieves key manager configurations.
Retrieves the key manager health monitor policy (fields=health_monitor_policy).

Related ONTAP commands

- `security key-manager config show`
- `security key-manager health policy show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
cc_mode_enabled	boolean	Indicates whether the Common Criteria Mode configuration is enabled.
cloud_kms_retry_count	integer	Cloud key manager connection retry count. Supported value range of 0-10.
health_monitor_policy	health_monitor_policy	Manages the keystore configurations.
health_monitor_polling_interval	integer	Health Monitor Polling Period, in minutes. Supported value range of 15-30 minutes.
passphrase	string	Current cluster-wide passphrase. This is a required field when setting the cc_mode_enabled field value to true. This is not audited.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cloud_kms_retry_count": 3,
  "health_monitor_polling_interval": 20,
  "passphrase": "The cluster passphrase of length 64-256 ASCII
characters."
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

akv

Azure Key Vault Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

aws

Amazon Web Services Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

barbican

Barbican Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.

Name	Type	Description
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

gcp

Google Cloud Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

ikp

IBM Key Protect Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

kmip

External Key Manager policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

okm

Onboard Key Manager policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

health_monitor_policy

Manages the keystore configurations.

Name	Type	Description
akv	akv	Azure Key Vault Key Management Service policy options
aws	aws	Amazon Web Services Key Management Service policy options
barbican	barbican	Barbican Key Management Service policy options
gcp	gcp	Google Cloud Key Management Service policy options
ikp	ikp	IBM Key Protect Key Management Service policy options
kmip	kmip	External Key Manager policy options
okm	okm	Onboard Key Manager policy options

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update key manager configurations

PATCH `/security/key-manager-configs`

Introduced In: 9.10

Updates key manager configurations.
Updates the key manager health monitor policy.

Related ONTAP commands

- `security key-manager config modify`
- `security key-manager health policy modify`

Request Body

Name	Type	Description
cc_mode_enabled	boolean	Indicates whether the Common Criteria Mode configuration is enabled.
cloud_kms_retry_count	integer	Cloud key manager connection retry count. Supported value range of 0-10.
health_monitor_policy	health_monitor_policy	Manages the keystore configurations.
health_monitor_polling_interval	integer	Health Monitor Polling Period, in minutes. Supported value range of 15-30 minutes.
passphrase	string	Current cluster-wide passphrase. This is a required field when setting the cc_mode_enabled field value to true. This is not audited.

Example request

```
{
  "cloud_kms_retry_count": 3,
  "health_monitor_polling_interval": 20,
  "passphrase": "The cluster passphrase of length 64-256 ASCII
characters."
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536139	Cluster-wide passphrase is incorrect.
65536805	Common Criteria Mode requires an effective cluster version of ONTAP 9.4 or later.
65536806	Passphrase length error.
65536807	MetroCluster cannot be configured while in Common Criteria mode.
65536809	Common Criteria mode is disabled on the cluster. Contact technical support for assistance in enabling Common Criteria mode.
65537301	The Onboard Key Manager is not enabled.
65537302	The passphrase field is required when changing cc_mode_enabled to true.
65537303	Modifying polling period requires an effective cluster version of ONTAP 9.10 or later.
65537304	Unable to modify polling period because no external key management is configured on the cluster.
65538404	Modifying cloud keymanager retry count requires an effective cluster version of ONTAP 9.11 or later.
65539303	Modifying the health monitor policy requires an effective cluster version of 9.15 or later.

Error Code	Description
65539304	The health monitor policy feature is not enabled.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

akv

Azure Key Vault Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

aws

Amazon Web Services Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

barbican

Barbican Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

gcp

Google Cloud Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

ikp

IBM Key Protect Key Management Service policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

kmip

External Key Manager policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

okm

Onboard Key Manager policy options

Name	Type	Description
enabled	boolean	Indicates whether health monitor is enabled.
manage_volume_offline	boolean	Indicates whether the health monitor manages the volume offline operation.

health_monitor_policy

Manages the keystore configurations.

Name	Type	Description
akv	akv	Azure Key Vault Key Management Service policy options
aws	aws	Amazon Web Services Key Management Service policy options
barbican	barbican	Barbican Key Management Service policy options
gcp	gcp	Google Cloud Key Management Service policy options
ikp	ikp	IBM Key Protect Key Management Service policy options
kmip	kmip	External Key Manager policy options
okm	okm	Onboard Key Manager policy options

key_manager_config

Manages the various key manager configuration options.

Name	Type	Description
cc_mode_enabled	boolean	Indicates whether the Common Criteria Mode configuration is enabled.
cloud_kms_retry_count	integer	Cloud key manager connection retry count. Supported value range of 0-10.
health_monitor_policy	health_monitor_policy	Manages the keystore configurations.

Name	Type	Description
health_monitor_polling_interval	integer	Health Monitor Polling Period, in minutes. Supported value range of 15-30 minutes.
passphrase	string	Current cluster-wide passphrase. This is a required field when setting the cc_mode_enabled field value to true. This is not audited.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage key managers

Security key-managers endpoint overview

Overview

A key manager is a key management solution (software or dedicated hardware) that enables other ONTAP client modules to securely and persistently store keys for various uses. For example, WAFL uses the key management framework to store and retrieve the volume encryption keys that it uses to encrypt/decrypt data on NVE volumes. A key manager can be configured at both cluster scope and SVM, with one key manager allowed per SVM. The key management framework in ONTAP supports two mutually exclusive modes for persisting keys: external and onboard.

When an SVM is configured with external key management, the keys are stored on up to four primary key servers that are external to the system.

Once external key management is enabled for an SVM, primary key servers can be added or removed using the */api/security/key-managers/{uuid}/key-servers* endpoint. See [`POST /security/key-managers/{uuid}/key-servers`] and [`DELETE /security/key-managers/{uuid}/key-servers/{server}`] for more details.

Setting up external key management dictates that the required certificates for securely communicating with the key server are installed prior to configuring the key manager. To install the required client and server_ca certificates, use the */api/security/certificates/* endpoint.

See [`POST /security/certificates`], [`GET /security/certificates/uuid`] and [`DELETE /security/certificates/{uuid}`] for more details.

When an SVM is configured with the Onboard Key Manager, the keys are stored in ONTAP in wrapped format using a key hierarchy created using the salted hash of the passphrase entered when configuring the Onboard Key Manager. This model fits well for customers who use ONTAP to store their own data.

Examples

Creating an external key manager with 1 primary key server for a cluster

The example key manager is configured at the cluster-scope with one primary key server. Note that the UUIDs of the certificates are those that are already installed at the cluster-scope. Note the *return_records=true* query parameter is used to obtain the newly created key manager configuration.

```
# The API:
POST /api/security/key-managers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-
managers?return_records=true' -H 'accept: application/hal+json' -d "{
\"external\": { \"client_certificate\": { \"uuid\": \"5fb1701a-d922-11e8-
bfe8-005056bb017d\" }, \"server_ca_certificates\": [ { \"uuid\":
\"827d7d31-d6c8-11e8-b5bf-005056bb017d\" }],\"servers\": [ { \"server\":
\"10.225.89.33:5696\" } ] } }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "815e9462-dc57-11e8-9b2c-005056bb017d",
    "external": {
      "client_certificate": {
        "uuid": "5fb1701a-d922-11e8-bfe8-005056bb017d"
      },
      "server_ca_certificates": [
        {
          "uuid": "827d7d31-d6c8-11e8-b5bf-005056bb017d"
        }
      ],
      "servers": [
        {
          "server": "10.225.89.33:5696"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/815e9462-dc57-11e8-9b2c-
005056bb017d"
      }
    }
  }
]
}
```

Creating an external key manager with two primary key servers

The example key manager is configured at the cluster-scope with two primary key servers. Note that the UUIDs of the certificates are those that are already installed at the cluster-scope. Note the *return_records=true* query parameter is used to obtain the newly created key manager configuration.

```
# The API:
POST /api/security/key-managers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-
managers?return_records=true' -H 'accept: application/hal+json' -d "{
\"external\": { \"client_certificate\": { \"uuid\": \"5fb1701a-d922-11e8-
bfe8-005056bb017d\" }, \"server_ca_certificates\": [ { \"uuid\":
\"827d7d31-d6c8-11e8-b5bf-005056bb017d\" }],\"servers\": [ { \"server\":
\"104.224.89.33:5696\" }, { \"server\": \"104.224.89.34:5696\" } ] } }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "815e9462-dc57-11e8-9b2c-005056bb017d",
    "external": {
      "client_certificate": {
        "uuid": "5fb1701a-d922-11e8-bfe8-005056bb017d"
      },
      "server_ca_certificates": [
        {
          "uuid": "827d7d31-d6c8-11e8-b5bf-005056bb017d"
        }
      ],
      "servers": [
        {
          "server": "10.225.89.33:5696"
        },
        {
          "server": "10.225.89.34:5696"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/815e9462-dc57-11e8-9b2c-
005056bb017d"
      }
    }
  }
]
}
```

Creating an external key manager with 1 primary key server for an SVM

The example key manager is configured at the SVM-scope with one primary key server. Note that the UUIDs of the certificates are those that are already installed in that SVM. Note the *return_records=true* query parameter is used to obtain the newly created key manager configuration.

```
# The API:
POST /api/security/key-managers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-
managers?return_records=true' -H 'accept: application/hal+json' -d "{
\"svm\": { \"uuid\": \"216e6c26-d6c6-11e8-b5bf-005056bb017d\" },
\"external\": { \"client_certificate\": { \"uuid\": \"91dcaf7c-dbbd-11e8-
9b2c-005056bb017d\" }, \"server_ca_certificates\": [ { \"uuid\":
\"a4d4b8ba-dbbd-11e8-9b2c-005056bb017d\" }],\"servers\": [ { \"server\":
\"10.225.89.34:5696\" } ] } }"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "80af63f2-dbbf-11e8-9b2c-005056bb017d",
    "svm": {
      "uuid": "216e6c26-d6c6-11e8-b5bf-005056bb017d"
    },
    "external": {
      "client_certificate": {
      "uuid": "91dcaf7c-dbbd-11e8-9b2c-005056bb017d"
      },
      "server_ca_certificates": [
        {
          "uuid": "a4d4b8ba-dbbd-11e8-9b2c-005056bb017d"
        }
      ],
      "servers": [
        {
          "server": "10.225.89.34:5696"
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/80af63f2-dbbf-11e8-9b2c-
005056bb017d"
      }
    }
  }
]
}
```

Creating an onboard key manager for a cluster

The following example shows how to create an onboard key manager for a cluster with the onboard key manager configured at the cluster-scope.

```
# The API:
POST /api/security/key-managers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-managers' -H 'accept:
application/hal+json' -d '{ "onboard": { "passphrase": "passphrase" } }'
```

Retrieving the key manager configurations for all clusters and SVMs

The following example shows how to retrieve all configured key managers along with their configurations.

```
# The API:
GET /api/security/key-managers

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers?fields=*' -H
'accept: application/hal+json'

# The response:
{
"records": [
  {
    "configuration": {
      "uuid": "2345f09c-d6c9-11e8-b5bf-005056bb017d",
      "name" : "default"
    },
    "uuid": "2345f09c-d6c9-11e8-b5bf-005056bb017d",
    "scope": "svm",
    "svm": {
      "uuid": "0f22f8f3-d6c6-11e8-b5bf-005056bb017d",
      "name": "vs0"
    },
    "external": {
      "client_certificate": {
        "uuid": "4cb15482-d6c8-11e8-b5bf-005056bb017d",
        "_links": {
          "self": {
            "href": "/api/security/certificates/4cb15482-d6c8-11e8-b5bf-
005056bb017d/"
```

```
          }
        }
      },
      "server_ca_certificates": [
        {
          "uuid": "8a17c858-d6c8-11e8-b5bf-005056bb017d",
          "_links": {
            "self": {
              "href": "/api/security/certificates/8a17c858-d6c8-11e8-b5bf-
005056bb017d/"
            }
          }
        }
      ],
      "servers": [
        {
          "server": "10.2.30.4:5696",
          "timeout": 25,
          "username": "",
          "create_remove_timeout": 10,
          "_links": {
            "self": {
              "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d/key-servers/10.2.30.4:5696/"
            }
          }
        },
        {
          "server": "vs0.local1:3678",
          "timeout": 25,
          "username": "",
          "secondary_key_servers": "1.1.1.1, secondarykeyserver.com",
          "create_remove_timeout": 10,
          "_links": {
            "self": {
              "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d/key-servers/vs0.local1:3678/"
            }
          }
        }
      ]
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d"
```

```
      }
    }
  },
  {
   "configuration": {
      "uuid": "815e9462-dc57-11e8-9b2c-005056bb017d",
      "name" : "default"
    },
    "enabled": true,
    "uuid": "815e9462-dc57-11e8-9b2c-005056bb017d",
    "scope": "cluster",
    "external": {
      "client_certificate": {
        "uuid": "5fb1701a-d922-11e8-bfe8-005056bb017d",
        "_links": {
          "self": {
            "href": "/api/security/certificates/5fb1701a-d922-11e8-bfe8-
005056bb017d/"
          }
        }
      },
      "server_ca_certificates": [
        {
          "uuid": "827d7d31-d6c8-11e8-b5bf-005056bb017d",
          "_links": {
            "self": {
              "href": "/api/security/certificates/827d7d31-d6c8-11e8-b5bf-
005056bb017d/"
            }
          }
        }
      ],
      "servers": [
        {
          "server": "10.225.89.33:5696",
          "timeout": 25,
          "username": "",
          "create_remove_timeout": 10,
          "_links": {
            "self": {
              "href": "/api/security/key-managers/815e9462-dc57-11e8-9b2c-
005056bb017d/key-servers/10.225.89.33:5696/"
            }
          }
        }
      ]
```

```
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/815e9462-dc57-11e8-9b2c-
005056bb017d"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/security/key-managers?fields=*"
  }
}
}
```

Retrieving the key manager configurations for all clusters and SVMs (showing Onboard Key Manager)

The following example shows how to retrieve all configured key managers along with their configurations.

```
# The API:
GET /api/security/key-managers

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers?fields=*' -H
'accept: application/hal+json'

# The response:
{
"records": [
  {
   "configuration": {
      "uuid": "815e9462-dc57-11e8-9b2c-005056bb017d",
      "name" : "default"
    },
    "enabled": true,
    "uuid": "8ba52e0f-ae22-11e9-b747-005056bb7636",
    "scope": "cluster",
    "onboard": {
      "enabled": true,
      "key_backup": "--------------------------BEGIN
BACKUP--------------------------\n <Backup Data>
\n--------------------------END BACKUP--------------------------\n"
    },
    "volume_encryption": {
      "supported": false,
      "message": "The following nodes do not support volume granular
encryption: ntap-vsim2.",
      "code": 65536935
    },
    "is_default_data_at_rest_encryption_disabled": false
  }
],
"num_records": 1
}
```

Retrieving expensive fields such as, status.code and status.message, associated with a key manager.

These values are not retrieved by default with the 'fields=*' option.
The following example shows how to retrieve the expensive objects associated with a key manager.

```
# The API:
GET /api/security/key-managers

# The call:
curl -X GET "https://<mgmt-ip>/api/security/key-
managers?fields=status.message,status.code" -H 'accept:
application/hal+jon'

# The response:
{
"records": [
  {
    "configuration": {
      "uuid": "ac305d46-aef4-11e9-ad3c-005056bb7636",
      "name" : "default"
    },
    "enabled": true,
    "uuid": "ac305d46-aef4-11e9-ad3c-005056bb7636",
    "status": {
      "message": "No action needed at this time.",
      "code": 65537200
    },
    "_links": {
      "self": {
        "href": "/api/security/key-managers/ac305d46-aef4-11e9-ad3c-
005056bb7636"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/key-managers?fields=status.message,status.code"
  }
}
}
```

Retrieving a specific key manager configuration

The following example shows how to retrieve a specific key manager configuration.

```
# The API:
```

```
GET /api/security/key-managers/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/<uuid>?fields=*'
-H 'accept: application/hal+json'

# The response:
{
"configuration": {
      "uuid": "2345f09c-d6c9-11e8-b5bf-005056bb017d",
      "name" : "default"
},
"enabled": true,
"uuid": "2345f09c-d6c9-11e8-b5bf-005056bb017d",
"scope": "svm",
"svm": {
  "uuid": "0f22f8f3-d6c6-11e8-b5bf-005056bb017d",
  "name": "vs0"
},
"external": {
  "client_certificate": {
    "uuid": "4cb15482-d6c8-11e8-b5bf-005056bb017d",
    "_links": {
      "self": {
        "href": "/api/security/certificates/4cb15482-d6c8-11e8-b5bf-
005056bb017d/"
      }
    }
  },
  "server_ca_certificates": [
    {
      "uuid": "8a17c858-d6c8-11e8-b5bf-005056bb017d",
      "_links": {
        "self": {
          "href": "/api/security/certificates/8a17c858-d6c8-11e8-b5bf-
005056bb017d/"
        }
      }
    }
  ],
  "servers": [
    {
      "server": "10.2.30.4:5696",
      "timeout": 25,
      "username": "",
      "create_remove_timeout": 10,
```

```
      "_links": {
        "self": {
          "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d/key-servers/10.2.30.4:5696/"
        }
      }
    },
    {
      "server": "vs0.local1:3678",
      "timeout": 25,
      "username": "",
      "create_remove_timeout": 10,
      "_links": {
        "self": {
          "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d/key-servers/vs0.local1:3678/"
        }
      }
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/security/key-managers/2345f09c-d6c9-11e8-b5bf-
005056bb017d"
  }
}
}
```


Updating the configuration of an external key manager

The following example shows how to update the server_ca configuration of an external key manager.

```
# The API:
PATCH /api/security/key-managers/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-managers/<uuid>?' -H
'accept: application/hal+json' -d "{ \"external\": {
\"server_ca_certificates\": [ { \"uuid\": \"23b05c58-d790-11e8-b5bf-
005056bb017d\" }] } }"
```

Updating the passphrase of an Onboard Key Manager

The following example shows how to update the passphrase of a given key manager.

```
# The API:
PATCH /api/security/key-managers/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-managers/<uuid>?' -H
'accept: application/hal+json' -d "{ \"onboard\": {
\"existing_passphrase\": \"existing_passphrase\", \"passphrase\":
\"new_passphrase\" } }"
```

Synchronizing the passphrase of the Onboard Key Manager on a cluster

The following example shows how to synchronize the passphrase on a cluster where the Onboard Key Manager is already configured.

```
# The API:
PATCH /api/security/key-managers/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-managers/<uuid>?' -H
'accept: application/hal+json' -d "{  \"onboard\": {
\"existing_passphrase\": \"existing_passphrase\",    \"synchronize\": true
}}"
```

Configuring the Onboard Key Manager on a cluster

The following example shows how to configure the Onboard Key Manager on a cluster where the Onboard Key Manager is not configured, but is configured on an MetroCluster partner cluster.

```
# The API:
POST /api/security/key-managers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-
managers?return_records=false' -H  'accept: application/hal+json' -H
"Content-Type: application/json" -d "{  \"onboard\": {    \"passphrase\":
\"passphrase\",    \"synchronize\": true  }}"
```

Deleting a configured key manager

The following example shows how to delete a key manager given its UUID.

```
# The API:
DELETE /api/security/key-managers/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/key-managers/<uuid>?' -H
'accept: application/hal+json'
```

Adding a primary key server to an external key manager

The following example shows how to add a primary key server to an external key manager.

```
# The API:
POST /api/security/key-managers/{uuid}/key-servers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers?return_records=true' -H 'accept: application/hal+json' -d "{
\"server\": \"10.225.89.34:5696\" }"

# The response:
{
"num_records": 1,
"records": [
  {
    "server": "10.225.89.34:5696",
    "_links": {
      "self": {
        "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers/10.225.89.34%3A5696"
      }
    }
  }
]
}
```

Adding 2 primary key servers to an external key manager

The following example shows how to add 2 primary key servers to an external key manager. Note that the *records* property is used to add multiple primary key servers to the key manager in a single API call.

```
# The API:
POST /api/security/key-managers/{uuid}/key-servers

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers?return_records=true' -H 'accept: application/hal+json' -d "{
\"records\": [ { \"server\": \"10.225.89.34:5696\" }, { \"server\":
\"10.225.89.33:5696\" } ] }"

# The response:
{
"num_records": 1,
"records": [
  {
    "_links": {
      "self": {
        "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers/"
      }
    }
  }
]
}
```

Retrieving all the key servers configured in an external key manager

The following example shows how to retrieve all key servers configured in an external key manager.

```
# The API:
GET /api/security/key-managers/{uuid}/key-servers

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers?fields=*' -H 'accept: application/hal+json'

# The response:
{
"records": [
  {
    "uuid": "43e0c191-dc5c-11e8-9b2c-005056bb017d",
    "server": "10.225.89.33:5696",
    "timeout": 25,
    "username": "",
```

```
    "secondary_key_servers": [
      "1.1.1.1",
      "secondarykeyserver.com"
    ],
    "create_remove_timeout": 10,
    "_links": {
      "self": {
        "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers/10.225.89.33%3A5696"
      }
    }
  },
  {
    "uuid": "43e0c191-dc5c-11e8-9b2c-005056bb017d",
    "server": "10.225.89.34:5696",
    "timeout": 25,
    "username": "",
    "create_remove_timeout": 10,
    "_links": {
      "self": {
        "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers/10.225.89.34%3A5696"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers?fields=*"
  }
}
}
```


Retrieving a specific primary key server (and any associated secondary key servers) configured in an external key manager

The following example shows how to retrieve a specific primary key server (and any associated secondary key servers) configured in an external key manager.

```
# The API:
GET /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}?fields=*' -H 'accept: application/hal+json'

# The response:
{
"uuid": "43e0c191-dc5c-11e8-9b2c-005056bb017d",
"server": "10.225.89.34:5696",
"timeout": 25,
"username": "",
"secondary_key_servers": [
  "1.1.1.1",
  "secondarykeyserver.com"
],
"create_remove_timeout": 10,
"_links": {
  "self": {
    "href": "/api/security/key-managers/43e0c191-dc5c-11e8-9b2c-
005056bb017d/key-servers/10.225.89.34:5696"
  }
}
}
```

Retrieving a specific primary key server (and any associated secondary key servers) (and connectivity, an expensive field) configured in an external key manager

The following example shows how to retrieve a specific primary key server (and any associated secondary key servers) configured in an external key manager.

```
# The API:
GET /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}?fields=**' -H 'accept: application/hal+json'

# The response:
{
"uuid": "43e0c191-dc5c-11e8-9b2c-005056bb017d",
"server": "10.225.89.34:5696",
"timeout": 25,
"username": "",
"secondary_key_servers": [
  "1.1.1.1",
  "secondarykeyserver.com"
],
"create_remove_timeout": 10,
"connectivity": {
  "cluster_availability": true,
  "node_states": [
    {
      "node": {
        "name": "sti65-vsim-ucs148i",
        "uuid": "661843b3-a0e5-11ed-81ef-005056a7306b"
      },
      "state": "available"
    },
    {
      "node": {
        "name": "sti65-vsim-ucs148j",
        "uuid": "551843b3-a0e5-11ed-81ef-005056a7306b"
      },
      "state": "not_responding"
    }
  ]
}
}
```

Retrieving the connectivity status of a specific node for a specific primary key server configured in an external key manager

The following example shows how to retrieve the connectivity status for a specific node for a specific primary key server configured in an external key manager.

```
# The API:
GET /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/43e0c191-dc5c-
11e8-9b2c-005056bb017d/key-
servers/10.225.89.34:5696?fields=connectivity&connectivity.node_states.nod
e.name=sti65-vsim-ucs148i&return_unmatched_nested_array_objects=false' -H
'accept: application/hal+json'

# The response:
{
"uuid": "43e0c191-dc5c-11e8-9b2c-005056bb017d",
"server": "10.225.89.34:5696",
"connectivity": {
  "cluster_availability": true,
  "node_states": [
    {
      "node": {
        "name": "sti65-vsim-ucs148i",
        "uuid": "661843b3-a0e5-11ed-81ef-005056a7306b"
      },
      "state": "available"
    }
  ]
}
}
```

Updating a specific primary key server configuration configured in an external key manager

The following example shows how to update a specific primary key server configured in an external key manager.

```
# The API:
PATCH /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}' -H 'accept: application/hal+json' -d "{ \"timeout\": 45
}"
```

When the 'secondary_key_servers' field is populated in the PATCH API, the list of secondary key servers

associated with the primary key servers is replaced by the list of secondary key servers specified in the

'secondary_key_servers' field.

The following example shows how to update the set of secondary key servers associated with a primary key server.

```
# The API:
PATCH /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}' -H 'accept: application/hal+json' -d "{
\"secondary_key_servers\": [ \"1.1.1.1\", \"secondarykeyserver.com\" ] }"
```

Deleting a primary key server from an external key manager

The following example shows how to delete a primary key server from an external key manager.

```
# The API:
DELETE /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}' -H 'accept: application/hal+json'
```

Bypass the out of quorum checks when deleting a primary key server from an external key manager

The following example shows how to bypass the out of quorum checks when deleting a primary key server from an external key manager.

```
# The API:
DELETE /api/security/key-managers/{uuid}/key-servers/{server}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/key-managers/<uuid>/key-
servers/{server}?force=true' -H 'accept: application/hal+json'
```

Retrieve key managers

GET `/security/key-managers`

Introduced In: 9.6

Retrieves key managers.

Expensive properties

There is an added computational cost to retrieving these properties. They are excluded from default GET results and must be explicitly requested using the `fields` query parameter. For more details, see Requesting specific fields. Additionally, these fields are unavailable for inactive configurations as they are only relevant to active configurations.

- `status.message`
- `status.code`

Examples

- To retrieve basic information about a key manager:

```
GET /security/key-managers
```

- To retrieve specific fields, including expensive properties:

```
GET /security/key-managers/?fields=status.code,status.message
```

Related ONTAP commands

- `security key-manager show-key-store`
- `security key-manager external show`
- `security key-manager external show-status`
- `security key-manager onboard show-backup`

Parameters

Name	Type	In	Required	Description
volume_encryption.code	integer	query	False	Filter by volume_encryption.code • Introduced in: 9.7

Name	Type	In	Required	Description
volume_encryption.message	string	query	False	Filter by volume_encryption.message • Introduced in: 9.7
volume_encryption.supported	boolean	query	False	Filter by volume_encryption.supported • Introduced in: 9.7
is_default_data_at_rest_encryption_disabled	boolean	query	False	Filter by is_default_data_at_rest_encryption_disabled • Introduced in: 9.7
scope	string	query	False	Filter by scope
uuid	string	query	False	Filter by uuid
status.message	string	query	False	Filter by status.message • Introduced in: 9.7
status.code	integer	query	False	Filter by status.code • Introduced in: 9.7
onboard.key_backup	string	query	False	Filter by onboard.key_backup • Introduced in: 9.7
onboard.enabled	boolean	query	False	Filter by onboard.enabled

Name	Type	In	Required	Description
configuration.uuid	string	query	False	Filter by configuration.uuid • Introduced in: 9.16
configuration.name	string	query	False	Filter by configuration.name • Introduced in: 9.16
policy	string	query	False	Filter by policy • Introduced in: 9.9
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled • Introduced in: 9.16
external.client_certificate.uuid	string	query	False	Filter by external.client_certificate.uuid
external.client_certificate.name	string	query	False	Filter by external.client_certificate.name • Introduced in: 9.8
external.servers.server	string	query	False	Filter by external.servers.server
external.servers.connectivity.cluster_availability	boolean	query	False	Filter by external.servers.connectivity.cluster_availability • Introduced in: 9.7

Name	Type	In	Required	Description
external.servers.connectivity.node_states.state	string	query	False	Filter by external.servers.connectivity.node_states.state • Introduced in: 9.13
external.servers.connectivity.node_states.node.uuid	string	query	False	Filter by external.servers.connectivity.node_states.node.uuid • Introduced in: 9.13
external.servers.connectivity.node_states.node.name	string	query	False	Filter by external.servers.connectivity.node_states.node.name • Introduced in: 9.13
external.servers.timeout	integer	query	False	Filter by external.servers.timeout • Max value: 60 • Min value: 1
external.servers.secondary_key_servers	string	query	False	Filter by external.servers.secondary_key_servers • Introduced in: 9.8
external.servers.username	string	query	False	Filter by external.servers.username
external.server_ca_certificates.uuid	string	query	False	Filter by external.server_ca_certificates.uuid

Name	Type	In	Required	Description
external.server_ca_certificates.name	string	query	False	Filter by external.server_ca_certificates.name • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[security_key_manager]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "configuration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      },
      "external": {
        "client_certificate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "string",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "server_ca_certificates": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "string",
```

```
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        ],
        "servers": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "connectivity": {
              "node_states": [
                {
                  "node": {
                    "_links": {
                      "self": {
                        "href": "/api/resourcelink"
                      }
                    },
                    "name": "node1",
                    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
                  },
                  "state": "not_responding"
                }
              ]
            },
            "secondary_key_servers": "secondary1.com, 10.2.3.4",
            "server": "keyserver1.com:5698",
            "timeout": 60,
            "username": "admin"
          }
        ]
      },
      "onboard": {
        "existing_passphrase": "The cluster password of length 32-256
ASCII characters.",
        "key_backup": "'--------------------------BEGIN
BACKUP--------------------------
TmV0QXBwIEtleSBCbG9iAAEAAAAEAAAAcAEAAAAAAAAxBFWWAAAAACEAAAAAAAAA
QAAAAAAAAABzDyyVAAAAALI5Jsjvy6gUxnT78KoDKXHYb6sSeraM00quOULY6BeV
n6dMFxuErCD1lbERaOQZSuaYy1p8oQHtTEfGMLZM4TYiAAAAAAAAACgAAAAAAAAA
3WTh7gAAAAAAAAAAAAAAAAIAAAAAAAgAZJEIWvdeHr5RCAvHGclo+wAAAAAAAAAA
IgAAAAAAAAoAAAAAAAAAEOTcR0AAAAAAAAAAAAAAACAAAAAAAJAGr3tJA/LRzU
QRHwv+1aWvAAAAAAAAAACQAAAAAAAAgAAAAAAAADV1Vd/AAAAAMFM9Q229Bhp
mDaTSdqku5DCd8wG+fOZSr4bx4JT5WHvV/r5gJnXDQQAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABOZXRBcHAgS2V5IEJsb2IA
AQAAAAMAAAAYAQAAAAAALgePkcAAAAAIgAAAAAAAAAoAAAAAAAAAEOTcR0AAAAA
AAAAAAAAAAACAAAAAAAJAGr3tJA/LRzUQRHwv+1aWvAAAAAAAAAAACIAAAAAAAAA
KAAAAAAAAACIlCHZAAAAAAAAAAAAAAAAAAgAAAAAAAQCafcabsxRXMM7gxhLRrzxh
AAAAAAAAAAAkAAAAAAAAAIAAAAAAAAAA2JjQBQAAAACt4IqXcNpVggahl0axLsN4
yQjnNVKWY7mANB29O42hI7b70DTGCTaVAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAE5ldEFwcCBLZXkgQmxvYgABAAAAAwAAABgBAAAAAAAA
7sbaoQAAAAAiAAAAAAAAACgAAAAAAAAQ5NxHQAAAAAAAAAAAAAAAAIAAAAAAAkA
ave0kD8tHNRBEfC/7Vpa8AAAAAAAAAAAIgAAAAAAAAoAAAAAAAALOHfWkAAAAA
AAAAAAAAAAACAAAAAAABAMoI9UxrHOGthQm/CB+EHdAAAAAAAAAAACQAAAAAAAAA
gAAAAAAAAACnMmUtAAAAAGVk8AtPzENFgsGdsFvnmucmYrlQCsFew0HDSFKaZqK6
W8IEVzBAhPoAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
----------END BACKUP----------'",
        "synchronize": true
      },
      "policy": "string",
      "scope": "string",
      "status": {
        "code": 346758,
        "message": "This cluster is part of a MetroCluster
configuration. Use the REST API POST method security/key_managers/ with
the synchronize option and the same passphrase on the partner cluster
before proceeding with any key manager operations.  Failure to do so
could lead to switchover or switchback failure."
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "string",
      "volume_encryption": {
        "code": 346758,
        "message": "No platform support for volume encryption in
```

```
following nodes - node1, node2."
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

configuration

Security keystore object reference.

Name	Type	Description
_links	_links	
name	string	Name of the configuration.
uuid	string	Keystore UUID.

client_certificate

Client certificate (name and UUID)

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

server_ca_certificates

Security certificate object reference

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

self_link

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

key_server_readcreate

Name	Type	Description
_links	self_link	
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
secondary_key_servers	string	A comma delimited string of the secondary key servers associated with the primary key server.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	Username credentials for connecting with the key server.

external

Configures external key management

Name	Type	Description
client_certificate	client_certificate	Client certificate (name and UUID)
server_ca_certificates	array[server_ca_certificates]	The array of certificates that are common for all the keyservers per SVM.
servers	array[key_server_readcreate]	The set of external key servers.

onboard

Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.

Name	Type	Description
enabled	boolean	Is the onboard key manager enabled?
existing_passphrase	string	The cluster-wide passphrase. This is not audited.
key_backup	string	Backup of the onboard key manager's key hierarchy. It is required to save this backup after configuring the onboard key manager to help in the recovery of the cluster in case of catastrophic failures.

status

Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns 0 if the setup is complete. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
message	string	Current state of the key manager indicating any additional steps to perform to finish the setup. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_encryption

Indicates whether volume encryption is supported in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if volume encryption is supported in all nodes of the cluster.
message	string	Reason for not supporting volume encryption.
supported	boolean	Set to true when volume encryption support is available on all nodes of the cluster.

security_key_manager

Name	Type	Description
_links	_links	
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
external	external	Configures external key management
is_default_data_at_rest_encryption_disabled	boolean	Indicates whether default data-at-rest encryption is disabled in the cluster. This field is deprecated in ONTAP 9.8 and later. Use the "software_data_encryption.disabled_by_default" of /api/security endpoint. • Default value: • Introduced in: 9.7 • x-ntap-readModify: true • x-nullable: true
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
policy	string	Security policy associated with the key manager. This value is currently ignored if specified for the onboard key manager.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
status	status	Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	
volume_encryption	volume_encryption	Indicates whether volume encryption is supported in the cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a key manager

POST `/security/key-managers`

Introduced In: 9.6

Creates a key manager.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create a key manager.
- `external.client_certificate` - Client certificate. Required only when creating an external key manager.
- `external.server_ca_certificates` - Server CA certificates. Required only when creating an external key manager.

- `external.servers.server` - Primary Key servers. Required only when creating an external key manager.
- `onboard.passphrase` - Cluster-wide passphrase. Required only when creating an Onboard Key Manager.
- `synchronize` - Synchronizes missing onboard keys on any node in the cluster. Required only when creating an Onboard Key Manager at the partner site of a MetroCluster configuration.

Optional parameters:

- `create_inactive` - Create a configuration without enabling it. This flag is set to "false" by default.

Related ONTAP commands

- `security key-manager external enable`
- `security key-manager onboard enable`
- `security key-manager onboard sync`

Parameters

Name	Type	In	Required	Description
create_inactive	boolean	query	False	Indicates whether to create an active or inactive configuration. • Introduced in: 9.16

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.

Name	Type	Description
external	external	Configures external key management
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
policy	string	Security policy associated with the key manager. This value is currently ignored if specified for the onboard key manager.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request


```
{
  "configuration": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "external": {
    "client_certificate": {
      "name": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "server_ca_certificates": [
      {
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "servers": [
      {
        "secondary_key_servers": "secondary1.com, 10.2.3.4",
        "server": "keyserver1.com:5698",
        "timeout": 60,
        "username": "admin"
      }
    ]
  },
  "is_default_data_at_rest_encryption_disabled": true,
  "onboard": {
    "existing_passphrase": "The cluster password of length 32-256 ASCII
characters.",
    "key_backup": "'--------------------------BEGIN
BACKUP--------------------------
TmV0QXBwIEtleSBCbG9iAAEAAAAEAAAAcAEAAAAAAAAxBFWWAAAAACEAAAAAAAAA
QAAAAAAAAABzDyyVAAAAALI5Jsjvy6gUxnT78KoDKXHYb6sSeraM00quOULY6BeV
n6dMFxuErCD1lbERaOQZSuaYy1p8oQHtTEfGMLZM4TYiAAAAAAAAACgAAAAAAAAA
3WTh7gAAAAAAAAAAAAAAAAIAAAAAAAgAZJEIWvdeHr5RCAvHGclo+wAAAAAAAAAA
IgAAAAAAAAoAAAAAAAAAEOTcR0AAAAAAAAAAAAAAAACAAAAAAAJAGr3tJA/LRzU
QRHwv+1aWvAAAAAAAAAAACQAAAAAAAAgAAAAAAAAADV1Vd/AAAAAMFM9Q229Bhp
mDaTSdqku5DCd8wG+fOZSr4bx4JT5WHvV/r5gJnXDQQAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABOZXRBcHAgS2V5IEJsb2IA
AQAAAAMAAAAYAQAAAAAALgePkcAAAAAIgAAAAAAAAAoAAAAAAAAAEOTcR0AAAAA
AAAAAAAAAAACAAAAAAAJAGr3tJA/LRzUQRHwv+1aWvAAAAAAAAAAACIAAAAAAAAA
KAAAAAAAAACIlCHZAAAAAAAAAAAAAAAAAgAAAAAAAQCafcabsxRXMM7gxhLRrzxh
AAAAAAAAAAAkAAAAAAAAAIAAAAAAAAAA2JjQBQAAAACt4IqXcNpVggahl0axLsN4
yQjnNVKWY7mANB29O42hI7b70DTGCTaVAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAE5ldEFwcCBLZXkgQmxvYgABAAAAAwAAABgBAAAAAAAA
7sbaoQAAAAAiAAAAAAAAACgAAAAAAAAAQ5NxHQAAAAAAAAAAAAAAAAAIAAAAAAAkA
ave0kD8tHNRBEfC/7Vpa8AAAAAAAAAAIgAAAAAAAAAoAAAAAAAAALOHfWkAAAAA
AAAAAAAAAAACAAAAAAABAMoI9UxrHOGthQm/CB+EHdAAAAAAAAAAACQAAAAAAAAA
gAAAAAAAAACnMmUtAAAAAGVk8AtPzENFgsGdsFvnmucmYrlQCsFew0HDSFKaZqK6
W8IEVzBAhPoAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
----------END BACKUP----------'",
    "passphrase": "The cluster password of length 32-256 ASCII
characters."
  },
  "policy": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262224	Failed to contact the peer cluster.
262228	Failed to contact the peer cluster.
65536038	A maximum of 4 active primary key servers are allowed.
65536214	Failed to generate cluster key encryption key.
65536216	Failed to add cluster key encryption key.
65536310	Failed to setup the Onboard Key Manager because the MetroCluster peer is unhealthy.
65536341	Failed to setup the Onboard Key Manager because the MetroCluster peer is unhealthy.
65536508	The platform does not support data at rest encryption.
65536821	The certificate is not installed.
65536823	The SVM has key manager already configured.
65536824	Multitenant key management is not supported in MetroCluster configurations.
65536834	Failed to get existing key-server details for the SVM.
65536852	Failed to query supported KMIP protocol versions.
65536870	Key management servers already configured.
65536871	Duplicate key management servers exist.
65536876	External key management requires client and server CA certificates installed and with one or more key servers provided.

Error Code	Description
65536878	External key management cannot be configured as one or more volume encryption keys of the SVM are stored in cluster key management server.
65536895	External key manager cannot be configured because this cluster is part of a MetroCluster configuration and the partner site of this MetroCluster configuration has Onboard Key Manager configured.
65536900	The Onboard Key Manager cannot be configured because this cluster is part of a MetroCluster configuration and the partner site has the external key manager configured.
65536903	The Onboard Key Manager has failed to configure on some nodes in the cluster. Use the CLI to sync the Onboard Key Manager configuration on failed nodes.
65536906	The Onboard Key Manager has already been configured at the partner site. Use the CLI to sync the Onboard Key Manager with the same passphrase.
65536916	The Onboard Key Manager is only supported for an admin SVM.
65536920	The Onboard Key Manager passphrase length is incorrect.
65537240	The Onboard Key Manager passphrase must be provided when performing a POST/synchronize operation.
65537241	The Onboard Key Manager existing_passphrase must not be provided when performing a POST/synchronize operation.
65537244	Unable to sync/create Onboard Key Manager on the local cluster; Onboard Key Manager is already configured on the cluster.
65537245	Unable to sync/create Onboard Key Manager on the local cluster; Onboard Key Manager is not configured on the partner cluster.
65537246	Unable to sync/create Onboard Key Manager on local cluster. This cluster is not part of a MetroCluster configuration.
65537247	Internal error. Unable to sync the Onboard Key Manager on local cluster.
65537248	Unable to sync the Onboard Key Manager on local cluster.
65538111	The key manager policy is invalid.
65538120	The key manager policy is not supported on the admin SVM.

Error Code	Description
65539216	The Admin SVM has a key manager already configured.
65539221	Failed to configure the Onboard Key Manager because the MetroCluster peer cluster is unhealthy. Verify that the peer cluster is online and healthy.
65539500	Cannot create an inactive external key manager on this SVM because inactive external key managers can only be created on the admin SVM.
65539501	Cannot create an inactive external key manager on the admin SVM because an external key manager already exists on the admin SVM.
65539503	Cannot create an inactive external key manager on the admin SVM while MetroCluster is configured.
65539504	An effective cluster version of ONTAP 9.16.1 or later is required to create an inactive external key manager on the admin SVM.
65539511	Cannot create an inactive Onboard Key Manager on the admin SVM while MetroCluster is configured.
65539512	An effective cluster version of ONTAP 9.16.1 or later is required to create an inactive Onboard Key Manager configuration on the admin SVM.
65539580	Failed to create inactive Onboard Key Manager configuration.
65539581	Cannot create an inactive Onboard Key Manager on the admin SVM because an inactive Onboard Key Manager configuration already exists on the admin SVM.
65539582	Cannot specify the configuration name parameter. Only one Onboard Key Manager is supported for the admin SVM.
65539704	The key manager cannot be configured because the SVM has NAE volumes.
65539706	The Onboard Key Manager is already configured. Use the PATCH to sync all nodes with the Onboard Key Manager configuration.
66060338	Failed to establish secure connection for a key management server due to incorrect server_ca certificates.
66060339	Failed to establish secure connection for a key management server due to incorrect client certificates.
66060340	Failed to establish secure connection for a key management server due to Cryptsoft error.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

configuration

Security keystore object reference.

Name	Type	Description
name	string	Name of the configuration.
uuid	string	Keystore UUID.

client_certificate

Client certificate (name and UUID)

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

server_ca_certificates

Security certificate object reference

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

self_link

node

Name	Type	Description
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

key_server_readcreate

Name	Type	Description
secondary_key_servers	string	A comma delimited string of the secondary key servers associated with the primary key server.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	Username credentials for connecting with the key server.

external

Configures external key management

Name	Type	Description
client_certificate	client_certificate	Client certificate (name and UUID)
server_ca_certificates	array[server_ca_certificates]	The array of certificates that are common for all the keyservers per SVM.
servers	array[key_server_readcreate]	The set of external key servers.

onboard

Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.

Name	Type	Description
enabled	boolean	Is the onboard key manager enabled?
existing_passphrase	string	The cluster-wide passphrase. This is not audited.
key_backup	string	Backup of the onboard key manager's key hierarchy. It is required to save this backup after configuring the onboard key manager to help in the recovery of the cluster in case of catastrophic failures.
passphrase	string	The cluster-wide passphrase. This is not audited.
synchronize	boolean	Synchronizes missing onboard keys on any node in the cluster. If a node is added to a cluster that has onboard key management configured, the synchronize operation needs to be performed in a PATCH operation. In a MetroCluster configuration, if onboard key management is enabled on one site, then the synchronize operation needs to be run as a POST operation on the remote site providing the same passphrase.

status

Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns 0 if the setup is complete. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
message	string	Current state of the key manager indicating any additional steps to perform to finish the setup. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_encryption

Indicates whether volume encryption is supported in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if volume encryption is supported in all nodes of the cluster.
message	string	Reason for not supporting volume encryption.
supported	boolean	Set to true when volume encryption support is available on all nodes of the cluster.

security_key_manager

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
external	external	Configures external key management
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
policy	string	Security policy associated with the key manager. This value is currently ignored if specified for the onboard key manager.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete key managers

DELETE `/security/key-managers/{uuid}`

Introduced In: 9.6

Deletes a key manager.

Related ONTAP commands

- `security key-manager external disable`
- `security key-manager onboard disable`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Key manager UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536208	Failed to delete the SVM Key ID.
	65536233
Internal error. Deletion of km_wrapped_kdb key database has failed for the Onboard Key Manager.	
65536234	Internal error. Deletion of cluster_kdb key database has failed for the Onboard Key Manager.
	65536239
Encrypted volumes are found for the SVM.	
65536242	One or more self-encrypting drives are assigned an authentication key.
	65536243
Cannot determine authentication key presence on one or more self-encrypting drives.	
65536800	Failed to lookup onboard keys.
	65536813
Encrypted kernel core files found.	
65536817	Failed to determine if key manager is safe to disable.
	65536827
Failed to determine if the SVM has any encrypted volumes.	
65536828	External key management is not enabled for the SVM.
	65536867
Encrypted volumes are found for the SVM.	
196608301	Failed to determine the type of encryption.
	196608305

Error Code	Description
NAE aggregates are found in the cluster.	Also see the table of common errors in the Response body overview section of this documentation. * name: KEYMANAGER_MESSAGE_ERR_KM_DISABLE_ENC_CORE_CHECK_TIMEOUT message: Failed to disable the key manager because of a timeout when checking for encrypted cores.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve key managers

GET `/security/key-managers/{uuid}`

Introduced In: 9.6

Retrieves key managers.

Expensive properties

There is an added computational cost to retrieving these properties. They are excluded from default GET results and must be explicitly requested using the `fields` query parameter. For more details, see Requesting specific fields. Additionally, these fields are unavailable for inactive configurations as they are only relevant to active configurations.

- `status.message`
- `status.code`

Examples

- To retrieve basic information about a key manager:

```
GET /security/key-managers/{uuid}
```

- To retrieve specific fields, including expensive properties:

```
GET /security/key-managers/{uuid}?fields=status.message
```

Related ONTAP commands

- `security key-manager show-key-store`
- `security key-manager external show`
- `security key-manager external show-status`
- `security key-manager onboard show-backup`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Key manager UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
external	external	Configures external key management

Name	Type	Description
is_default_data_at_rest_encryption_disabled	boolean	Indicates whether default data-at-rest encryption is disabled in the cluster. This field is deprecated in ONTAP 9.8 and later. Use the "software_data_encryption.disabled_by_default" of /api/security endpoint. • Default value: 1 • Introduced in: 9.7 • x-ntap-readModify: true • x-nullable: true
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
policy	string	Security policy associated with the key manager. This value is currently ignored if specified for the onboard key manager.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
status	status	Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	
volume_encryption	volume_encryption	Indicates whether volume encryption is supported in the cluster.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configuration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "external": {
    "client_certificate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "server_ca_certificates": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "servers": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "connectivity": {
```

```
          "node_states": [
            {
              "node": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "node1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              },
              "state": "not_responding"
            }
          ]
        },
        "secondary_key_servers": "secondary1.com, 10.2.3.4",
        "server": "keyserver1.com:5698",
        "timeout": 60,
        "username": "admin"
      }
    ]
  },
  "onboard": {
    "existing_passphrase": "The cluster password of length 32-256 ASCII
characters.",
    "key_backup": "'--------------------------BEGIN
BACKUP--------------------------
TmV0QXBwIEtleSBCbG9iAAEAAAAEAAAAcAEAAAAAAAAxBFWWAAAAACEAAAAAAAAA
QAAAAAAAAABzDyyVAAAAALI5Jsjvy6gUxnT78KoDKXHYb6sSeraM00quOULY6BeV
n6dMFxuErCD1lbERaOQZSuaYy1p8oQHtTEfGMLZM4TYiAAAAAAAAACgAAAAAAAAA
3WTh7gAAAAAAAAAAAAAAAAIAAAAAAAgAZJEIWvdeHr5RCAvHGclo+wAAAAAAAAAA
IgAAAAAAAAoAAAAAAAAAEOTcR0AAAAAAAAAAAAAAAACAAAAAAAJAGr3tJA/LRzU
QRHwv+1aWvAAAAAAAAAACQAAAAAAAAgAAAAAAAADV1Vd/AAAAAMFM9Q229Bhp
mDaTSdqku5DCd8wG+fOZSr4bx4JT5WHvV/r5gJnXDQQAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

```
yQjnNVKWY7mANB29O42hI7b70DTGCTaVAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAE5ldEFwcCBLZXkgQmxvYgABAAAAAwAAABgBAAAAAAAA
7sbaoQAAAAAiAAAAAAAAACgAAAAAAAAAQ5NxHQAAAAAAAAAAAAAAAAAIAAAAAAAkA
ave0kD8tHNRBEfC/7Vpa8AAAAAAAAAAAIgAAAAAAAAAoAAAAAAAAALOHfWkAAAAA
AAAAAAAAAAACAAAAAAABAMoI9UxrHOGthQm/CB+EHdAAAAAAAAAAACQAAAAAAAAA
gAAAAAAAAACnMmUtAAAAAGVk8AtPzENFgsGdsFvnmucmYrlQCsFew0HDSFKaZqK6
W8IEVzBAhPoAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
----------END BACKUP----------'",
    "synchronize": true
  },
  "policy": "string",
  "scope": "string",
  "status": {
    "code": 346758,
    "message": "This cluster is part of a MetroCluster configuration.
Use the REST API POST method security/key_managers/ with the
synchronize option and the same passphrase on the partner cluster
before proceeding with any key manager operations.  Failure to do so
could lead to switchover or switchback failure."
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string",
  "volume_encryption": {
    "code": 346758,
    "message": "No platform support for volume encryption in following
nodes - node1, node2."
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536894	This cluster is part of a MetroCluster configuration. Configure an external key manager on the partner cluster providing the same key servers before proceeding with any key manager operations.
65537201	There are no key servers configured for this SVM in the local cluster.
65537202	There are no key servers configured for this SVM in the remote cluster.
65537203	Internal error. Failed to check for key servers on partner cluster.
65537204	This cluster is part of a MetroCluster configuration. Configure an external key manager on the partner cluster providing the same key servers before proceeding with any key manager operations.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

configuration

Security keystore object reference.

Name	Type	Description
_links	_links	
name	string	Name of the configuration.
uuid	string	Keystore UUID.

client_certificate

Client certificate (name and UUID)

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

server_ca_certificates

Security certificate object reference

Name	Type	Description
_links	_links	
name	string	Certificate name
uuid	string	Certificate UUID

self_link

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

key_server_readcreate

Name	Type	Description
_links	self_link	

Name	Type	Description
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
secondary_key_servers	string	A comma delimited string of the secondary key servers associated with the primary key server.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	Username credentials for connecting with the key server.

external

Configures external key management

Name	Type	Description
client_certificate	client_certificate	Client certificate (name and UUID)
server_ca_certificates	array[server_ca_certificates]	The array of certificates that are common for all the keyservers per SVM.
servers	array[key_server_readcreate]	The set of external key servers.

onboard

Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.

Name	Type	Description
enabled	boolean	Is the onboard key manager enabled?
existing_passphrase	string	The cluster-wide passphrase. This is not audited.
key_backup	string	Backup of the onboard key manager's key hierarchy. It is required to save this backup after configuring the onboard key manager to help in the recovery of the cluster in case of catastrophic failures.

status

Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns 0 if the setup is complete. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
message	string	Current state of the key manager indicating any additional steps to perform to finish the setup. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_encryption

Indicates whether volume encryption is supported in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if volume encryption is supported in all nodes of the cluster.
message	string	Reason for not supporting volume encryption.
supported	boolean	Set to true when volume encryption support is available on all nodes of the cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update key managers

PATCH `/security/key-managers/{uuid}`

Introduced In: 9.6

Updates a key manager.
Note: When validate_certificates is set, the API returns a 202 status code for successful creation of the job, otherwise an error is returned.

Required properties (when patching the Onboard Key Manager)

- `onboard.existing_passphrase` - Cluster-wide passphrase. Required only when synchronizing the passphrase of the Onboard Key Manager.
- `synchronize` - Synchronizes missing Onboard Key Manager keys on any node in the cluster. Required only when synchronizing the Onboard Key Manager keys in a local cluster.

Required properties (when patching an external key manager)

- `external.client_certificate` or `external.server_ca_certificates` - Client certificate or Server CA certificate. Required when modifying an external key manager.

Optional parameters (when patching an external key manager):

- `validate_certificates` - Validate certificates by testing the connection to the KMIP server using them. This flag is set to "false" by default.

Related ONTAP commands

- `security key-manager external modify`
- `security key-manager onboard sync`
- `security key-manager onboard update-passphrase`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Key manager UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
enabled	boolean	Indicates whether the configuration is enabled.
external	external	Configures external key management

Name	Type	Description
is_default_data_at_rest_encryption_disabled	boolean	Indicates whether default data-at-rest encryption is disabled in the cluster. This field is deprecated in ONTAP 9.8 and later. Use the "software_data_encryption.disabled_by_default" of /api/security endpoint. • Default value: 1 • Introduced in: 9.7 • x-ntap-readModify: true • x-nullable: true
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
uuid	string	

Example request


```
{
  "external": {
    "client_certificate": {
      "name": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "server_ca_certificates": [
      {
        "name": "string",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  },
  "onboard": {
    "existing_passphrase": "The cluster password of length 32-256 ASCII
characters.",
    "key_backup": "'--------------------------BEGIN
BACKUP--------------------------
TmV0QXBwIEtleSBCbG9iAAEAAAAEAAAAcAEAAAAAAAAxBFWWAAAAACEAAAAAAAAA
QAAAAAAAAABzDyyVAAAAALI5Jsjvy6gUxnT78KoDKXHYb6sSeraM00quOULY6BeV
n6dMFxuErCD1lbERaOQZSuaYy1p8oQHtTEfGMLZM4TYiAAAAAAAAACgAAAAAAAAA
3WTh7gAAAAAAAAAAAAAAAAIAAAAAAAgAZJEIWvdeHr5RCAvHGclo+wAAAAAAAAAA
IgAAAAAAAAoAAAAAAAAAEOTcR0AAAAAAAAAAAAAAAACAAAAAAAJAGr3tJA/LRzU
QRHwv+1aWvAAAAAAAAAACQAAAAAAAAgAAAAAAAADV1Vd/AAAAAMFM9Q229Bhp
mDaTSdqku5DCd8wG+fOZSr4bx4JT5WHvV/r5gJnXDQQAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABOZXRBcHAgS2V5IEJsb2IA
AQAAAAMAAAAYAQAAAAAALgePkcAAAAAIgAAAAAAAAAoAAAAAAAAAEOTcR0AAAAA
AAAAAAAAAAACAAAAAAAJAGr3tJA/LRzUQRHwv+1aWvAAAAAAAAAAACIAAAAAAAAA
KAAAAAAAAACIlCHZAAAAAAAAAAAAAAAAAgAAAAAAAQCafcabsxRXMM7gxhLRrzxh
AAAAAAAAAAAkAAAAAAAAAIAAAAAAAAAA2JjQBQAAAACt4IqXcNpVggahl0axLsN4
yQjnNVKWY7mANB29O42hI7b70DTGCTaVAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAE5ldEFwcCBLZXkgQmxvYgABAAAAAwAAABgBAAAAAAAA
7sbaoQAAAAAiAAAAAAAAACgAAAAAAAAQ5NxHQAAAAAAAAAAAAAAAAAIAAAAAAAkA
ave0kD8tHNRBEfC/7Vpa8AAAAAAAAAAAIgAAAAAAAAoAAAAAAAAALOHfWkAAAAA
AAAAAAAAAAACAAAAAAABAMoI9UxrHOGthQm/CB+EHdAAAAAAAAAAACQAAAAAAAA
gAAAAAAAAACnMmUtAAAAAGVk8AtPzENFgsGdsFvnmucmYrlQCsFew0HDSFKaZqK6
```

```
W8IEVzBAhPoAAA
```

Error Code	Description
65537242	The Onboard Key Manager existing_passphrase must be provided when performing a PATCH/synchronize operation.
65537243	The Onboard Key Manager passphrase must not be provided when performing a PATCH/synchronize operation.
65538120	The key manager policy is not supported on the admin SVM.
65539586	Cannot modify an inactive key manager configuration.
66060338	Failed to establish secure connection for a key management server due to incorrect server_ca certificates.
66060339	Failed to establish secure connection for a key management server due to incorrect client certificates.
66060340	Failed to establish secure connection for a key management server due to Cryptsoft error.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

configuration

Security keystore object reference.

Name	Type	Description
name	string	Name of the configuration.
uuid	string	Keystore UUID.

client_certificate

Client certificate (name and UUID)

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

server_ca_certificates

Security certificate object reference

Name	Type	Description
name	string	Certificate name
uuid	string	Certificate UUID

self_link

node

Name	Type	Description
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

key_server_readcreate

Name	Type	Description
secondary_key_servers	string	A comma delimited string of the secondary key servers associated with the primary key server.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	Username credentials for connecting with the key server.

external

Configures external key management

Name	Type	Description
client_certificate	client_certificate	Client certificate (name and UUID)

Name	Type	Description
server_ca_certificates	array[server_ca_certificates]	The array of certificates that are common for all the keyservers per SVM.

onboard

Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.

Name	Type	Description
enabled	boolean	Is the onboard key manager enabled?
existing_passphrase	string	The cluster-wide passphrase. This is not audited.
key_backup	string	Backup of the onboard key manager's key hierarchy. It is required to save this backup after configuring the onboard key manager to help in the recovery of the cluster in case of catastrophic failures.
passphrase	string	The cluster-wide passphrase. This is not audited.
synchronize	boolean	Synchronizes missing onboard keys on any node in the cluster. If a node is added to a cluster that has onboard key management configured, the synchronize operation needs to be performed in a PATCH operation. In a MetroCluster configuration, if onboard key management is enabled on one site, then the synchronize operation needs to be run as a POST operation on the remote site providing the same passphrase.

status

Optional status information on the current state of the key manager indicating if it is fully setup or requires more action.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns 0 if the setup is complete. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
message	string	Current state of the key manager indicating any additional steps to perform to finish the setup. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_encryption

Indicates whether volume encryption is supported in the cluster.

Name	Type	Description
code	integer	Code corresponding to the status message. Returns a 0 if volume encryption is supported in all nodes of the cluster.
message	string	Reason for not supporting volume encryption.
supported	boolean	Set to true when volume encryption support is available on all nodes of the cluster.

security_key_manager

Name	Type	Description
enabled	boolean	Indicates whether the configuration is enabled.
external	external	Configures external key management
is_default_data_at_rest_encryption_disabled	boolean	Indicates whether default data-at-rest encryption is disabled in the cluster. This field is deprecated in ONTAP 9.8 and later. Use the "software_data_encryption.disabled_by_default" of /api/security endpoint. • Default value: 1 • Introduced in: 9.7 • x-ntap-readModify: true • x-nullable: true
onboard	onboard	Configures onboard key management. After configuring onboard key management, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage authentication keys

Security key-managers security_key_manager.uuid auth-keys endpoint overview

Overview

Used to create and list authentication keys (NSE-AK).

Example

Creates an authentication key.

an external key manager must be configured on the admin SVM, as the authentication key will be associated with the admin SVM.
The following example shows how to create an authentication key.

```
# The API:
POST /api/security/key-managers/{security_key_manager.uuid}/auth-keys

# The call:
curl -X POST 'https://<mgmt-ip>/api/security/key-managers/5fb1701a-d922-
11e8-bfe8-005056bb017d/auth-keys?return_timeout=15&return_records=true' -H
'accept: application/hal+json'

# The response:
{
"num_records": 1,
"records": [
  {
    "key_id":
"00000000000000000200000000000100531d8cdc38437c2627b6b1726dd2675c000000000
0000000",
    "key_tag": "vsim1"
  }
]
}
```

Retrieving a list of all of the authentication keys associated with the admin SVM.

The following example shows how to retrieve a list of all of the authentication keys associated with the admin SVM.

```
# The API:
GET /api/security/key-managers/{security_key_manager.uuid}/auth-keys

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/5fb1701a-d922-
11e8-bfe8-005056bb017d/auth-keys?fields=*' -H 'accept:
application/hal+json'

# The response:
{
"num_records": 2,
"records": [
  {
    "security_key_manager": {
      "uuid": "d36a654d-14b4-11ed-b82e-005056bb8f59"
    },
    "key_id":
"00000000000000000200000000000100052ab79fc51a430dbb16f1c0d2054cfe000000000
0000000",
    "key_tag": "vsim1"
  },
  {
    "security_key_manager": {
      "uuid": "d36a654d-14b4-11ed-b82e-005056bb8f59"
    },
    "key_id":
"00000000000000000200000000000001003f32ce2dc55d2764c07da74e722c179b000000000
0000000",
    "key_tag": "vsim1"
  }
]
}
```

Retrieving a specific authentication key associated with the admin SVM.

The following example shows how to a specific authentication key associated with the admin SVM and return the key-tag.

```
= The API:

GET /api/security/key-managers/{security_key_manager.uuid}/auth-
keys/\{key-id}
```

```
= The call:

curl -X GET 'https://+++<mgmt-ip>+++/api/security/key-managers/5fb1701a-
d922-11e8-bfe8-005056bb017d/auth-
keys/0000000000000000020000000000010041a2dda969b0d179db8f1c78d629d0f100000
00000000000?fields=key_tag' -H 'accept: application/hal+json'+++</mgmt-
ip>+++

= The response:

{
"security_key_manager": {
  "uuid": "d36a654d-14b4-11ed-b82e-005056bb8f59"
},
"key_id":
"0000000000000000020000000000010041a2dda969b0d179db8f1c78d629d0f1000000000
0000000",
"key_tag": "vsim1"
}





[[IDb1114618556967e751cfb182ff8a98f9]]
= Retrieve authentication keys associated with the admin SVM

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/key-managers/{security_key_manager.uuid}/auth-keys`#

*Introduced In:* 9.12

Retrieves a list of all authentication keys associated with the admin SVM.

== Related ONTAP commands

* `security key-manager key query`

== Required properties

* `security_key_manager.uuid` - UUID of the external key manager.


== Parameters

[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description

|key_id
|string
|query
|False
a|Filter by key_id


|key_tag
|string
|query
|False
a|Filter by key_tag


|security_key_manager.uuid
|string
|path
|True
a|External key manager UUID


|fields
|array[string]
|query
|False
a|Specify the fields to return.


|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
```

```
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records
```

```
|records
|array[link:#key_manager_auth_key[key_manager_auth_key]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "key_id":
"00000000000000000200000000000001003aa8ce6a4fea3e466620134bea9510a1000000000
0000000",
      "key_tag": "Authentication-Key-01",
      "security_key_manager": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      }
    }
  ]
}
====

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536828
| External key management is not enabled for the SVM.

| 65536856
| No key servers found for the SVM.

| 65536896
| External key management is not configured on the partner site.

| 65538800
| External KMIP DKMIP keymanager not configured on administrative Vserver.

| 65538801
| Internal error while accessing keymanager database.

| 65538802
| The UUID provided is not associated with the administrator SVM key
manager.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===
```

```
.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===


[#self_link]
[.api-collapsible-fifth-title]
self_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|
```

```
|===


[#security_key_manager]
[.api-collapsible-fifth-title]
security_key_manager

Security key manager object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|uuid
|string
a|Key manager UUID


|===


[#key_manager_auth_key]
[.api-collapsible-fifth-title]
key_manager_auth_key

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#self_link[self_link]
a|

|key_id
|string
a|Key identifier.
```

```
|key_tag
|string
a|Optional parameter to define key-tag for the authentication key, length
0-32 characters.


|security_key_manager
|link:#security_key_manager[security_key_manager]
a|Security key manager object reference.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID335e02c4bd285558830fa8487038dd67]]
= Create an authentication key

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/security/key-managers/{security_key_manager.uuid}/auth-keys`#

*Introduced In:* 9.12

Creates an authentication key.

== Related ONTAP commands

* `security key-manager key create`

== Required properties

* `security_key_manager.uuid` - UUID of the external key manager.
```

```
== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|security_key_manager.uuid
|string
|path
|True
a|External key manager UUID


|return_records
|boolean
|query
|False
a|The default is false.  If set to true, the records are returned.

* Default value:

|===

== Request Body



[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier.


|key_tag
|string
a|Optional parameter to define key-tag for the authentication key, length
```

```
0-32 characters.


|passphrase
|string
a|Authentication passphrase, length 20-32 characters. May contain the '='
character.


|security_key_manager
|link:#security_key_manager[security_key_manager]
a|Security key manager object reference.


|===


.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "key_id":
"0000000000000000020000000000001003aa8ce6a4fea3e466620134bea9510a1000000000
0000000",
  "key_tag": "Authentication-Key-01",
  "passphrase": "AuthenticationKey_01",
  "security_key_manager": {
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  }
}
====

== Response
```

Status: 201, Created

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|num_records
|integer
a|Number of records
```

```
|records
|array[link:#key_manager_auth_key[key_manager_auth_key]]
a|

|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "records": [
    {
      "key_id":
"0000000000000000020000000000001003aa8ce6a4fea3e466620134bea9510a1000000000
0000000",
      "key_tag": "Authentication-Key-01",
      "passphrase": "AuthenticationKey_01",
      "security_key_manager": {
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      }
    }
  ]
}
====

=== Headers

[cols=3*,options=header]
|===
//header
|Name
|Description
|Type
//end header

//start row
|Location
|Useful for tracking the resource location
|string
//end row
//end table
|===
```

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536048
| The maximum number of authentication keys are already configured.

| 65536053
| Invalid passphrase length; passphrase must be 20-32 ASCII-range
characters.

| 65536056
| The key tag value provided contains invalid characters.

| 65536056
| The key-tag option cannot contain any spaces, tabs or new lines.

| 65536076
| Failed to push authentication key to any registered key servers.

| 65536160
| Unable to determine the current number of configured authentication
keys.

| 65536264
| Failed to create authentication key.

| 65536265
| Failed to create a key-id for the authentication key.

| 65536828
| External key management is not enabled for the SVM.

| 65536856
| No key servers found for the SVM.

| 65536872
| Error cleaning up key database after key creation error.

| 65536896
| External key management is not configured on the partner site.
```

```
| 65536987
| One or more key servers are unavailable.

| 65538800
| External KMIP DKMIP keymanager not configured on administrative Vserver.

| 65538801
| Internal error while accessing keymanager database.

| 65538802
| The UUID provided is not associated with the administrator SVM key
manager.

| 66060289
| Failed to store authentication key on key server.

| 66060304
| Invalid key length.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.


== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|
```

```
|===


[#self_link]
[.api-collapsible-fifth-title]
self_link
[#_links]
[.api-collapsible-fifth-title]
_links
[#security_key_manager]
[.api-collapsible-fifth-title]
security_key_manager

Security key manager object reference.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|uuid
|string
a|Key manager UUID


|===


[#key_manager_auth_key]
[.api-collapsible-fifth-title]
key_manager_auth_key

[cols=3*,options=header]
|===
|Name
|Type
|Description

|key_id
|string
a|Key identifier.


|key_tag
|string
```

```
a|Optional parameter to define key-tag for the authentication key, length
0-32 characters.


|passphrase
|string
a|Authentication passphrase, length 20-32 characters. May contain the '='
character.


|security_key_manager
|link:#security_key_manager[security_key_manager]
a|Security key manager object reference.


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID97a2340a3ea857594cb563ccde6c5122]]
= Delete an authentication key

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/security/key-managers/{security_key_manager.uuid}/auth-
keys/{key_id}`#

*Introduced In:* 9.12

Deletes an authentication key.

== Related ONTAP commands

* `security key-manager key delete`
```

```
== Required properties

* `security_key_manager.uuid` - UUID of the external key manager.
* `key_id` - Key ID of the authentication key to be deleted.


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|security_key_manager.uuid
|string
|path
|True
a|External key manager UUID


|key_id
|string
|path
|True
a|Key ID of the authentication key to be deleted.

|===

== Response
```

Status: 200, Ok

```
== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description
```

```
| 65536828
| External key management is not enabled for the SVM.

| 65536859
| Authentication key-Id provided for deletion is in use.

| 65536860
| Key-id provided for deletion is not an authentication key.

| 65538800
| External KMIP DKMIP keymanager not configured on administrative Vserver.

| 65538801
| Internal error while accessing keymanager database.

| 65538802
| The UUID provided is not associated with the administrator SVM key
manager.

| 66060296
| Failed to delete key from an external key server.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
```

```
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



[[ID6783de8e810496972b1d75b7bdf0016d]]
= List all authentication keys associated with the admin SVM

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/security/key-managers/{security_key_manager.uuid}/auth-
keys/{key_id}`#

*Introduced In:* 9.12

Retrieves the authentication key identified by the 'key_id' and associated
with the admin SVM.
```

```
== Related ONTAP commands

* `security key-manager key query`

== Required properties

* `security_key_manager.uuid` - UUID of the external key manager.
* `key_id` - Key ID of the authentication key to be retrieved.


== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|key_tag
|string
|query
|False
a|Filter by key_tag


|security_key_manager.uuid
|string
|path
|True
a|External key manager UUID


|key_id
|string
|path
|True
a|Key ID of the authentication key to be retrieved.


|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
|False
a|Limit the number of records returned.


|return_timeout
|integer
|query
|False
a|The number of seconds to allow the call to execute before returning.
When iterating over a collection, the default is 15 seconds.  ONTAP
returns earlier if either max records or the end of the collection is
reached.

* Default value: 1
* Max value: 120
* Min value: 0


|return_records
|boolean
|query
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

* Default value: 1


|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#self_link[self_link]
a|

|key_id
|string
a|Key identifier.


|key_tag
|string
a|Optional parameter to define key-tag for the authentication key, length
0-32 characters.


|security_key_manager
|link:#security_key_manager[security_key_manager]
a|Security key manager object reference.


|===


.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "key_id":
"0000000000000000020000000000001003aa8ce6a4fea3e466620134bea9510a1000000000
0000000",
  "key_tag": "Authentication-Key-01",
  "security_key_manager": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
```

```
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  }
}
====

== Error
```

Status: Default

```
ONTAP Error Response Codes

|===
| Error Code | Description

| 65536828
| External key management is not enabled for the SVM.

| 65536856
| No key servers found for the SVM.

| 65536896
| External key management is not configured on the partner site.

| 65538800
| External KMIP DKMIP keymanager not configured on administrative Vserver.

| 65538801
| Internal error while accessing keymanager database.

| 65538802
| The UUID provided is not associated with the administrator SVM key
manager.
|===

Also see the table of common errors in the
xref:{relative_path}getting_started_with_the_ontap_rest_api.html#Response_
body[Response body] overview section of this documentation.



[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|error
|link:#returned_error[returned_error]
a|

|===


.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
```

```
|string
a|

|===


[#self_link]
[.api-collapsible-fifth-title]
self_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===


[#security_key_manager]
[.api-collapsible-fifth-title]
security_key_manager

Security key manager object reference.
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|uuid
|string
a|Key manager UUID


|===


[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code


|message
|string
a|Message argument


|===


[#returned_error]
[.api-collapsible-fifth-title]
returned_error

[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====



:leveloffset: -1


= View security key managers

:leveloffset: +1


[[ID773914cd0110100695f36da5b02297ce]]
= Security key-managers security_key_manager.uuid keys node.uuid key-ids
endpoint overview



:doctype: book
```

```
== Overview

Retrieves the key manager keys on the give node. The following operations
are supported:

* Get

== Examples

=== Retrieving key manager key-id information for a node

The following example shows how to retrieve key-ids present on a node for
a key manager.

----

# The API:
GET /api/security/key-
managers/{security_key_manager.uuid}/keys/{node.uuid}/key-ids

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-managers/f4f98a48-8a5c-
c548-cd03-c6335f5803a8/keys/00000000-0000-0000-0000-000000000000/key-
ids/0000000000000000020000000000005009ad4da8fea2cafe2bed803078b780ebe000000
0000000c01' -H 'accept: application/hal+json'

# The response:
{
  "security_key_manager": {
    "uuid": "f4f98a48-8a5c-c548-cd03-c6335f5803a8"
  },
  "node": {
    "uuid": "00000000-0000-0000-0000-000000000000"
  },
  "key_id":
"0000000000000000020000000000005009ad4da8fea2cafe2bed803078b780ebe000000000
0000c01",
  "svm": {
    "name": "cluster-1"
  },
  "key_tag": "vsim1",
  "key_type": "vek",
  "restored": false,
  "key_store": "onboard",
  "key_user": "datavs",
```

```
  "key_manager": "onboard",
  "key_store_type": "okm",
  "encryption_algorithm": "XTS-AES-256",
  "_links": {
    "self": {
      "href": "/api/security/key-managers/f4f98a48-8a5c-c548-cd03-
c6335f5803a8/keys/00000000-0000-0000-0000-000000000000/key-
ids/0000000000000000020000000000005009ad4da8fea2cafe2bed803078b780ebe000000
0000000c01"
    }
  }
}
----

'''

=== Retrieving key manager key-id information of a specific key-type for a
node

The following example shows how to retrieve key-ids of a specific key-type
present on a node for a key manager.
```

The API:

GET /api/security/key-manager/{security_key_manager.uuid}/keys/{node.uuid}/key-ids

The call:

curl -X GET "https://<mgmt-ip>/api/security/key-managers/7c179931-044b-11ed-b7cd-005056bbc535/keys/44dac31e-0449-11ed-b7cd-005056bbc535/key-ids?key_type=nse_ak&return_records=true&return_timeout=15" -H "accept: application/json"</mgmt-ip>

The response:

{
"records": [
{
"key_server": "10.225.89.34:5696",
"key_id":
"0000000000000000020000000000001003d5c5f8c497e8e36aa80566e08749a3d0000000000000000",
"key_type": "nse_ak"
},
{
"key_server": "10.225.89.34:5696",
"key_id":
"0000000000000000020000000000000100c2dce9a3a15aeb8480db8d49c17d056c0000000000000000",
"key_type": "nse_ak"
}
],

"num_records": 2
}

Retrieve key manager configurations

GET `/security/key-managers/{security_key_manager.uuid}/keys/{node.uuid}/key-ids`

Introduced In: 9.11

Retrieves key manager configurations.

Required properties

- `security_key_manager.uuid` - Key manager UUID.
- `node.uuid` - Node UUID.

Related ONTAP commands

- `security key-manager key query`
- `security key-manager key query -node <node>`
- `security key-manager key query -node <node> -key-manager <key_manager>`

Parameters

Name	Type	In	Required	Description
key_store	string	query	False	Filter by key_store • Introduced in: 9.12
key_type	string	query	False	Filter by key_type • Introduced in: 9.12
node.name	string	query	False	Filter by node.name • Introduced in: 9.12
restored	boolean	query	False	Filter by restored • Introduced in: 9.12
scope	string	query	False	Filter by scope • Introduced in: 9.14

Name	Type	In	Required	Description
crn	string	query	False	Filter by crn • Introduced in: 9.12
key_store_type	string	query	False	Filter by key_store_type • Introduced in: 9.12
svm.name	string	query	False	Filter by svm.name • Introduced in: 9.14
svm.uuid	string	query	False	Filter by svm.uuid • Introduced in: 9.14
policy	string	query	False	Filter by policy • Introduced in: 9.12
key_user	string	query	False	Filter by key_user • Introduced in: 9.12
encryption_algorithm	string	query	False	Filter by encryption_algorithm • Introduced in: 9.12
key_manager	string	query	False	Filter by key_manager • Introduced in: 9.12
key_id	string	query	False	Filter by key_id • Introduced in: 9.12

Name	Type	In	Required	Description
key_server	string	query	False	Filter by key_server • Introduced in: 9.12
key_tag	string	query	False	Filter by key_tag • Introduced in: 9.12
security_key_manager.uuid	string	path	True	Key manager UUID.
node.uuid	string	path	True	Node UUID.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Name	Type	In	Required	Description
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[key_manager_keys]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "crn": "CRN=v1:bluemix:public:containers-kubernetes",
      "encryption_algorithm": "XTS-AES-256",
      "key_id":
"0000000000000000020000000000001008963c9213194c59555c1bec8db3603c8000000
00",
      "key_manager": "keyserver1.local:5696",
      "key_server": "keyserver1.com:5698",
      "key_store": "string",
      "key_store_type": "string",
      "key_tag": "key#",
      "key_type": "string",
      "key_user": "vs1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "policy": "IBM_Key_Lore",
      "restored": 1,
      "scope": "string",
      "security_key_manager": {
        "_links": {
          "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65537125	The provided key manager UUID is not the UUID of a keymanager.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

security_key_manager

Security key manager object reference.

Name	Type	Description
_links	_links	
uuid	string	Key manager UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

key_manager_keys

Displays the keys stored in a key manager.

Name	Type	Description
_links	self_link	
crn	string	Cloud resource name.
encryption_algorithm	string	Encryption algorithm for the key
key_id	string	Key identifier.
key_manager	string	Key manager key server managing the key. Indicates the external key server when external key manager is configured.
key_server	string	External key server for key management.
key_store	string	Security key manager configured for the given key manager UUID. Key manager keystore value can be onboard or external.
key_store_type	string	Security key manager keystore type. Keystore type can be onboard, external, or supported cloud key manager.
key_tag	string	Additional information associated with the key.
key_type	string	Encryption Key type.
key_user	string	SVM associated with the key.

Name	Type	Description
node	node	
policy	string	Key store policy.
restored	boolean	Indicates whether the key is present locally on the node.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
security_key_manager	security_key_manager	Security key manager object reference.
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve key management key information for specified keys

GET `/security/key-managers/{security_key_manager.uuid}/keys/{node.uuid}/key-ids/{key_id}`

Introduced In: 9.11

Retrieves the key management keys information for the specified key_id.

Related ONTAP commands

- security key-manager key query -key-id <key_id>
- security key-manager key query -key-id <key_id> -node <node>
- security key-manager key query -key-id <key_id> -node <node> -key-manager <key_manager>

Parameters

Name	Type	In	Required	Description
security_key_manager.uuid	string	path	True	Key manager UUID.
node.uuid	string	path	True	Node UUID.
key_id	string	path	True	Key identifier.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
crn	string	Cloud resource name.
encryption_algorithm	string	Encryption algorithm for the key
key_id	string	Key identifier.
key_manager	string	Key manager key server managing the key. Indicates the external key server when external key manager is configured.
key_server	string	External key server for key management.
key_store	string	Security key manager configured for the given key manager UUID. Key manager keystore value can be onboard or external.

Name	Type	Description
key_store_type	string	Security key manager keystore type. Keystore type can be onboard, external, or supported cloud key manager.
key_tag	string	Additional information associated with the key.
key_type	string	Encryption Key type.
key_user	string	SVM associated with the key.
node	node	
policy	string	Key store policy.
restored	boolean	Indicates whether the key is present locally on the node.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
security_key_manager	security_key_manager	Security key manager object reference.
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "crn": "CRN=v1:bluemix:public:containers-kubernetes",
  "encryption_algorithm": "XTS-AES-256",
  "key_id":
"00000000000000000200000000000001008963c9213194c59555c1bec8db3603c8000000
00",
  "key_manager": "keyserver1.local:5696",
  "key_server": "keyserver1.com:5698",
  "key_store": "string",
  "key_store_type": "string",
  "key_tag": "key#",
  "key_type": "string",
  "key_user": "vs1",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "policy": "IBM_Key_Lore",
  "restored": 1,
  "scope": "string",
  "security_key_manager": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
```

```
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

security_key_manager

Security key manager object reference.

Name	Type	Description
_links	_links	
uuid	string	Key manager UUID

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve and restore unrestored keys

POST `/security/key-managers/{security_key_manager.uuid}/restore`

Introduced In: 9.13

Retrieves and restores any current unrestored keys (associated with the storage controller) from the specified key management server.

Required properties

- `security_key_manager.uuid` - UUID of the key management server.
  The UUID of the external key manager can be retrieved using [`GET /api/security/key-managers`].

Related ONTAP commands

- `security key-manager external restore`

Parameters

Name	Type	In	Required	Description
security_key_manager.uuid	string	path	True	Key manager UUID.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
key_id	string	Key identifier.

Name	Type	Description
key_server	string	External key server for key management.
key_tag	string	Additional information associated with the key.
node	node	

Example request

```
{
  "key_id":
"0000000000000000020000000000001003aa8ce6a4fea3e466620134bea9510a1000000
0000000000",
  "key_server": "keyserver1.com:5698",
  "key_tag": "Authentication-Key-01",
  "node": {
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536083	Internal error. Failed to restore the authentication key.
65536843	The key management server is not configured for the SVM.
65536855	Internal error. Failed to restore the volume encryption key.
65538500	This command only restores keys from primary key servers.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
uuid	string	

security_key_manager_restore_keys

Name	Type	Description
key_id	string	Key identifier.
key_server	string	External key server for key management.
key_tag	string	Additional information associated with the key.
node	node	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Migrate SVM keys between security key managers

POST `/security/key-managers/{source.uuid}/migrate`

Introduced In: 9.7

Migrates the keys belonging to an SVM between the cluster's key manager and the SVM's key manager. This operation can run for several minutes.

Required properties

- `source.uuid` - UUID of the source key manager.
- `uuid` - UUID of the destination key manager.
  The UUID of onboard and external KMIP key manager can be fetched using [`GET /api/security/key-managers`].
  The UUID of Azure Key Vault key manager can be fetched using [`GET /api/security/azure-key-vaults`].
  The UUID of Google Cloud key manager can be fetched using [`GET /api/security/gcp-kms`].
  The UUID of Amazon Web Services key manager can be fetched using [`GET /api/security/aws-kms`].

Related ONTAP commands

- `security key-manager key migrate`

Parameters

Name	Type	In	Required	Description
source.uuid	string	path	True	Migration source key manager UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
uuid	string	Key manager UUID

Example request

```
{
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536886	The specified migration option is not supported in this release.
65536959	The source-uuid and UUID must be different values.
65536968	Check that all nodes of the cluster are healthy and retry the operation.

Error Code	Description
65537117	The migrate operation cannot be started because a UUID cannot be converted to an SVM name.
65537117	Cannot start migration because a key manager referenced by a provided UUID does not exist.
65537551	Top-level internal key protection key (KEK) is unavailable on one or more nodes.
65537552	Embedded KMIP server status is not available.
65537564	Check that the Azure Key Vault Service is healthy and retry the operation.
65537611	Key migration cannot be performed on the SVM while the enabled keystore configuration is being switched. If a previous attempt to switch the keystore configuration failed, or was interrupted, the system will continue to prevent key migration for the SVM. Use the REST API PATCH method "/api/security/key-stores/{uuid}" to re-run and complete the operation.
65537720	Failed to configure the Google Cloud Key Management Service for an SVM because a key manager is already configured.
65537736	Check that the Google Cloud Key Management Service is healthy and retry the operation.
65538107	Key migration to an IBM Key Lore key manager is not supported.
65539434	Cannot perform key migration on the SVM while the keystore is being initialized. Wait until the keystore is in the active state, and rerun the key migration operation.
65539435	Cannot perform key migration on the SVM while the keystore is being disabled.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

info

Migration destination key manager UUID

Name	Type	Description
uuid	string	Key manager UUID

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

List key servers configured in an external key manager

GET `/security/key-managers/{uuid}/key-servers`

Introduced In: 9.6

Retrieves the list of key servers configured in an external key manager.

Expensive properties

There is an added computational cost to retrieving these properties. They are excluded from default GET results and must be explicitly requested using the `fields` query parameter. For more details, see Requesting specific fields. Additionally, these fields are unavailable for inactive configurations as they are only relevant to active configurations.

- `connectivity.cluster_availability`
- `connectivity.node_states.node.name`
- `connectivity.node_states.node.uuid`
- `connectivity.node_states.state`

Examples

- To retrieve basic information about a key server:

```
GET /security/key-managers/{uuid}/key-servers
```

- To retrieve specific fields, including expensive properties:

```
GET /security/key-managers/{uuid}/key-
servers?fields=connectivity.cluster_availability,connectivity.node_state
s.node.name
```

Related ONTAP commands

- `security key-manager external show`
- `security key-manager external show-status`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	External key manager UUID
username	string	query	False	Filter by username

Name	Type	In	Required	Description
secondary_key_servers	string	query	False	Filter by secondary_key_servers • Introduced in: 9.8
create_remove_timeout	integer	query	False	Filter by create_remove_timeout • Introduced in: 9.14 • Max value: 60 • Min value: -1
server	string	query	False	Filter by server
connectivity.cluster_availability	boolean	query	False	Filter by connectivity.cluster_availability • Introduced in: 9.7
connectivity.node_states.state	string	query	False	Filter by connectivity.node_states.state • Introduced in: 9.13
connectivity.node_states.node.uuid	string	query	False	Filter by connectivity.node_states.node.uuid • Introduced in: 9.13
connectivity.node_states.node.name	string	query	False	Filter by connectivity.node_states.node.name • Introduced in: 9.13

Name	Type	In	Required	Description
timeout	integer	query	False	Filter by timeout • Max value: 60 • Min value: -1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[key_server]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "connectivity": {
        "node_states": [
          {
            "node": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "state": "not_responding"
          }
        ]
      },
      "create_remove_timeout": 60,
      "password": "password",
      "secondary_key_servers": [
        "secondary1.com",
        "10.1.2.3"
      ],
      "server": "keyserver1.com:5698",
      "timeout": 60,
      "username": "username"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.

Name	Type	Description
node_states	array[key_server_state]	An array of key server connectivity states for each node.

records

Name	Type	Description
_links	_links	
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
password	string	Password credentials for connecting with the key server. This is not audited.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	KMIP username credentials for connecting with the key server.

key_server

Name	Type	Description
_links	_links	

Name	Type	Description
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
create_remove_timeout	integer	The key server timeout for create and remove operations. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
password	string	Password credentials for connecting with the key server. This is not audited.
secondary_key_servers	array[string]	A list of the secondary key servers associated with the primary key server.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.
timeout	integer	I/O timeout in seconds for communicating with the key server. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
username	string	KMIP username credentials for connecting with the key server.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add primary key servers to an external key manager

POST `/security/key-managers/{uuid}/key-servers`

Introduced In: 9.6

Adds primary key servers to a configured external key manager.

Required properties

- `uuid` - UUID of the external key manager.
- `server` - Primary Key server name.

Related ONTAP commands

- `security key-manager external add-servers`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	External key manager UUID

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
password	string	Password credentials for connecting with the key server. This is not audited.
records	array[records]	An array of key servers specified to add multiple key servers to a key manager in a single API call. Valid in POST only and not valid if `server` is provided.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.

Example request

```
{
  "password": "password",
  "records": [
    {
      "password": "password",
      "server": "bulkkeyserver.com:5698"
    }
  ],
  "server": "keyserver1.com:5698"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[key_server]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "password": "password",
      "records": [
        {
          "password": "password",
          "server": "bulkkeyserver.com:5698"
        }
      ],
      "server": "keyserver1.com:5698"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536038	A maximum of 4 active primary key servers are allowed.
65536042	Cannot add key server because it is already a secondary key server.
65536600	Cannot add a key server while a node is out quorum.
65536821	The certificate is not installed.

Error Code	Description
65536824	Multitenant key management is not supported in MetroCluster configurations.
65536828	External key management is not enabled for the SVM.
65536834	Failed to get existing key-server details for the SVM.
65536852	Failed to query supported KMIP protocol versions.
65536870	Key management servers are already configured.
65536870	The key management servers already exist.
65536871	Duplicate key management servers exist.
65536921	Unable to execute the command on the KMIP server.
66060338	Unable to establish secure connection to KMIP server due to incorrect server_ca certificates.
66060339	Unable to establish secure connection to KMIP server due to incorrect client certificates.
66060340	Unable to establish secure connection to KMIP server due to Cryptsoft error.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

records

Name	Type	Description
password	string	Password credentials for connecting with the key server. This is not audited.

Name	Type	Description
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.

key_server

Name	Type	Description
password	string	Password credentials for connecting with the key server. This is not audited.
records	array[records]	An array of key servers specified to add multiple key servers to a key manager in a single API call. Valid in POST only and not valid if `server` is provided.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a primary key server

DELETE `/security/key-managers/{uuid}/key-servers/{server}`

Introduced In: 9.6

Deletes a primary key server.

Optional parameters:

- `force` - Bypass Out of Quorum checks when deleting a primary key server. This flag is set to "false" by default.

Related ONTAP commands

- `security key-manager external remove-servers`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	External key manager UUID
server	string	path	True	Primary key server configured in the external key manager.
force	boolean	query	False	Set the force flag to "true" to bypass out of quorum checks when removing a primary key server. • Introduced in: 9.11 • Default value:

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536600	Cannot remove a key server while a node is out of quorum.
65536700	The key server contains keys that are currently in use and not available from any other configured key server in the SVM.
65536843	The key management server is not configured for the SVM.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve key servers configured in an external key manager

GET `/security/key-managers/{uuid}/key-servers/{server}`

Introduced In: 9.6

Retrieves key servers configured in an external key manager.

Expensive properties

There is an added computational cost to retrieving these properties. They are excluded from default GET results and must be explicitly requested using the `fields` query parameter. For more details, see Requesting specific fields. Additionally, these fields are unavailable for inactive configurations as they are only relevant to active configurations.

- `connectivity.cluster_availability`
- `connectivity.node_states.node.name`
- `connectivity.node_states.node.uuid`
- `connectivity.node_states.state`

Examples

- To retrieve basic information about a key server:

```
GET /security/key-managers/{uuid}/key-servers/{server}
```

- To retrieve specific fields, including expensive properties:

```
GET /security/key-managers/{uuid}/key-
servers/{server}?fields=connectivity.cluster_availability,connectivity.n
ode_states.node.name
```

Related ONTAP commands

- `security key-manager external show`
- `security key-manager external show-status`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	External key manager UUID
server	string	path	True	Primary Key server configured in the key manager.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
create_remove_timeout	integer	The key server timeout for create and remove operations. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
password	string	Password credentials for connecting with the key server. This is not audited.
secondary_key_servers	array[string]	A list of the secondary key servers associated with the primary key server.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.
timeout	integer	I/O timeout in seconds for communicating with the key server. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
username	string	KMIP username credentials for connecting with the key server.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "connectivity": {
    "node_states": [
      {
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "state": "not_responding"
      }
    ]
  },
  "create_remove_timeout": 60,
  "password": "password",
  "secondary_key_servers": [
    "secondary1.com",
    "10.1.2.3"
  ],
  "server": "keyserver1.com:5698",
  "timeout": 60,
  "username": "username"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

records

Name	Type	Description
_links	_links	
connectivity	connectivity	This property contains the key server connectivity state of all nodes in the cluster. This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.
password	string	Password credentials for connecting with the key server. This is not audited.
server	string	External key server for key management. If no port is provided, a default port of 5696 is used. Not valid in POST if `records` is provided.
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	KMIP username credentials for connecting with the key server.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update a primary key server

PATCH `/security/key-managers/{uuid}/key-servers/{server}`

Introduced In: 9.6

Updates a primary key server.

Related ONTAP commands

- `security key-manager external modify-server`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	External key manager UUID
server	string	path	True	Primary key server configured in the external key manager.

Request Body

Name	Type	Description
create_remove_timeout	integer	The key server timeout for create and remove operations. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
password	string	Password credentials for connecting with the key server. This is not audited.

Name	Type	Description
secondary_key_servers	array[string]	A list of the secondary key servers associated with the primary key server.
timeout	integer	I/O timeout in seconds for communicating with the key server. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
username	string	KMIP username credentials for connecting with the key server.

Example request

```
{
  "create_remove_timeout": 60,
  "password": "password",
  "secondary_key_servers": [
    "secondary1.com",
    "10.1.2.3"
  ],
  "timeout": 60,
  "username": "username"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65536600	Cannot modify a key server while a node is out quorum.

Error Code	Description
65536824	Multitenant key management is not supported in MetroCluster configurations.
65536828	External key management is not enabled for the SVM.
65536843	The key management server is not configured for the SVM.
65536845	Missing username.
65536846	Missing password.
65536880	One or more of the following values must be provided "timeout", "username", "password", "secondary_key_servers", "create_remove_timeout".
65536921	Unable to execute the command on the KMIP server.
65537400	Exceeded maximum number of secondary key servers.
65538407	A secondary key server is a duplicate of the associated primary key server.
65538408	The list of secondary key servers contains duplicates.
65538413	A secondary key server address is not formatted correctly.
65538502	A secondary key server is also a primary key server.
65538503	Support for adding secondary key servers requires an ECV of ONTAP 9.11.1 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

key_server_state

The connectivity state of the key server for a specific node.

Name	Type	Description
node	node	
state	string	Key server connectivity state

connectivity

This property contains the key server connectivity state of all nodes in the cluster.
This is an advanced property; there is an added computational cost to retrieving its value. The property is not populated for either a collection GET or an instance GET unless it is explicitly requested using the `fields` query parameter or GET for all advanced properties is enabled.

Name	Type	Description
cluster_availability	boolean	Set to true when key server connectivity state is available on all nodes of the cluster.
node_states	array[key_server_state]	An array of key server connectivity states for each node.

records

Name	Type	Description
password	string	Password credentials for connecting with the key server. This is not audited.

Name	Type	Description
timeout	integer	I/O timeout in seconds for communicating with the key server.
username	string	KMIP username credentials for connecting with the key server.

key_server

Name	Type	Description
create_remove_timeout	integer	The key server timeout for create and remove operations. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
password	string	Password credentials for connecting with the key server. This is not audited.
secondary_key_servers	array[string]	A list of the secondary key servers associated with the primary key server.
timeout	integer	I/O timeout in seconds for communicating with the key server. -1 indicates that the server will wait indefinitely for the event to occur. 0 indicates that the server will not wait and will immediately timeout if it does not receive a response.
username	string	KMIP username credentials for connecting with the key server.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage keystores

Security key-stores endpoint overview

Overview

A keystore describes a key-manager configuration, specifically the type of key-manager and whether the configuration is currently enabled for the configured SVM.

Examples

Retrieving information for all configured key managers

The following example shows how to retrieve information about all configured key managers.

```
# The API:
GET /api/security/key-stores

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-stores?fields=*' -H
'accept: application/hal+json'

# The response:
{
"records": [
  {
    "type": "okm",
    "configuration": {
```

```
      "name": "default",
      "uuid": "ec8711c9-4e9f-11ef-b477-005056bb677e"
    },
    "uuid": "ec8711c9-4e9f-11ef-b477-005056bb677e",
    "enabled": true,
    "location": "onboard",
    "scope": "cluster",
    "state": "active"
  },
  {
    "type": "kmip",
    "configuration": {
      "name": "default",
      "uuid": "d81f43cd-4e9f-11ef-b477-005056bb677e"
    },
    "uuid": "d81f43cd-4e9f-11ef-b477-005056bb677e",
    "enabled": false,
    "location": "external",
    "scope": "cluster"
  },
  {
    "type": "kmip",
    "configuration": {
      "name": "default",
      "uuid": "7da22185-4ea0-11ef-b477-005056bb677e"
    },
    "uuid": "7da22185-4ea0-11ef-b477-005056bb677e",
    "enabled": true,
    "location": "external",
    "scope": "svm",
    "svm": {
      "name": "vs0",
      "uuid": "3cbe691b-4ea0-11ef-b477-005056bb677e"
    },
    "state": "active"
  }
],
"num_records": 3
}
```

Retrieving a specific keystore by its UUID

The following example shows how to retrieve information about a specific keystore.

```
# The API:
GET /api/security/key-stores/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/security/key-stores/33421d82-0a8d-11ec-
ae88-005056bb5955?fields=*' -H 'accept: application/hal+json'

# The response:
{
"type": "okm",
"configuration": {
  "name": "default",
  "uuid": "ec8711c9-4e9f-11ef-b477-005056bb677e"
},
"uuid": "ec8711c9-4e9f-11ef-b477-005056bb677e",
"enabled": true,
"location": "onboard",
"scope": "cluster",
"state": "active"
}
```

Enabling a specific keystore configuration

The following example shows how to enable a specific keystore configuration.

```
# The API:
PATCH /api/security/key-stores/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/security/key-stores/33421d82-0a8d-
11ec-ae88-005056bb5955' -H 'accept: application/hal+json' -d "{
\"enabled\": true }"
```

Deleting a specific keystore configuration

The following example shows how to delete a specific keystore configuration. Only an inactive configuration can be deleted.

```
# The API:
DELETE /api/security/key-stores/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/security/key-stores/33421d82-0a8d-
11ec-ae88-005056bb5955' -H 'accept: application/hal+json'
```

Retrieve keystores

GET `/security/key-stores`

Introduced In: 9.10

Retrieves keystores.

Related ONTAP commands

- `security key-manager show-key-store`
- `security key-manager keystore show`

Parameters

Name	Type	In	Required	Description
location	string	query	False	Filter by location
state	string	query	False	Filter by state • Introduced in: 9.16
scope	string	query	False	Filter by scope • Introduced in: 9.14
configuration.uuid	string	query	False	Filter by configuration.uuid • Introduced in: 9.14
configuration.name	string	query	False	Filter by configuration.name • Introduced in: 9.14

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
enabled	boolean	query	False	Filter by enabled • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[security_keystore]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "configuration": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
      },
      "location": "string",
      "scope": "string",
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13434920	SVM does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

configuration

Security keystore object reference.

Name	Type	Description
_links	_links	
name	string	Name of the configuration.
uuid	string	Keystore UUID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_keystore

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
location	string	Indicates whether the keystore is onboard or external. * 'onboard' - Onboard Key Database * 'external' - External Key Database, including KMIP and Cloud Key Management Systems
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
state	string	State of the keystore: * 'active' - The key manager is active and serving new and existing keys. * 'mixed' - The key manager has a mixed configuration. New keys can’t be created. * 'svm_kek_rekey' - An SVM key encryption key (KEK) rekey is in progress. New keys can’t be created. * 'blocked' - The key manager is blocked and cannot serve new and existing keys. * 'switching' - Switching the enabled key manager keystore configuration. Some operations are blocked. * 'initializing' - The key manager is being initialized. All operations are blocked. * 'disabling' - The key manager is being disabled. All operations are blocked.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
type	string	Type of keystore that is configured: * 'okm' - Onboard Key Manager * 'kmip' - External Key Manager * 'akv' - Azure Key Vault Key Management Service * 'gcp' - Google Cloud Platform Key Management Service * 'aws' - Amazon Web Service Key Management Service * 'ikp' - IBM Key Protect Key Management Service * 'barbican' - Barbican Key Management Service
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an inactive keystore configuration

DELETE `/security/key-stores/{uuid}`

Introduced In: 9.14

Deletes an inactive keystore configuration.

Related ONTAP commands

- `security key-manager keystore delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262155	This operation requires an effective cluster version of 9.14.0 or later.
65538905	The keystore configuration is currently enabled and cannot be deleted.
65538907	The method is not yet supported for deleting the given UUID's type of configuration.
65538908	The specified keystore configuration UUID either does not exist or corresponds to a keystore configuration that is not supported by this operation.
65539521	An effective cluster version of ONTAP 9.16.1 or later is required to delete an inactive key manager on the admin SVM.
65539522	This command does not support disabling key manager configurations with the specified keystore type on the admin SVM.
65539593	Cannot delete an inactive key manager configuration while the keystore is in the switching state.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve keystore configuration details with the specified UUID

GET `/security/key-stores/{uuid}`

Introduced In: 9.14

Retrieves details of the keystore configuration with the specified UUID.

Related ONTAP commands

- `security key-manager keystore show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Keystore configuration UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
location	string	Indicates whether the keystore is onboard or external. * 'onboard' - Onboard Key Database * 'external' - External Key Database, including KMIP and Cloud Key Management Systems
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".

Name	Type	Description
state	string	State of the keystore: * 'active' - The key manager is active and serving new and existing keys. * 'mixed' - The key manager has a mixed configuration. New keys can’t be created. * 'svm_kek_rekey' - An SVM key encryption key (KEK) rekey is in progress. New keys can’t be created. * 'blocked' - The key manager is blocked and cannot serve new and existing keys. * 'switching' - Switching the enabled key manager keystore configuration. Some operations are blocked. * 'initializing' - The key manager is being initialized. All operations are blocked. * 'disabling' - The key manager is being disabled. All operations are blocked.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of keystore that is configured: * 'okm' - Onboard Key Manager * 'kmip' - External Key Manager * 'akv' - Azure Key Vault Key Management Service * 'gcp' - Google Cloud Platform Key Management Service * 'aws' - Amazon Web Service Key Management Service * 'ikp' - IBM Key Protect Key Management Service * 'barbican' - Barbican Key Management Service
uuid	string	

Example response

```
{
  "configuration": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "location": "string",
  "scope": "string",
  "state": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
65539523	Internal error. The keymanager_config table is missing.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

configuration

Security keystore object reference.

Name	Type	Description
_links	_links	
name	string	Name of the configuration.
uuid	string	Keystore UUID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Enable a keystore configuration

PATCH `/security/key-stores/{uuid}`

Introduced In: 9.14

Enables a keystore configuration

Related ONTAP commands

- `security key-manager keystore enable`
- `security key-manager keystore disable`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Keystore configuration UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
location	string	Indicates whether the keystore is onboard or external. * 'onboard' - Onboard Key Database * 'external' - External Key Database, including KMIP and Cloud Key Management Systems

Name	Type	Description
state	string	State of the keystore: * 'active' - The key manager is active and serving new and existing keys. * 'mixed' - The key manager has a mixed configuration. New keys can’t be created. * 'svm_kek_rekey' - An SVM key encryption key (KEK) rekey is in progress. New keys can’t be created. * 'blocked' - The key manager is blocked and cannot serve new and existing keys. * 'switching' - Switching the enabled key manager keystore configuration. Some operations are blocked. * 'initializing' - The key manager is being initialized. All operations are blocked. * 'disabling' - The key manager is being disabled. All operations are blocked.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of keystore that is configured: * 'okm' - Onboard Key Manager * 'kmip' - External Key Manager * 'akv' - Azure Key Vault Key Management Service * 'gcp' - Google Cloud Platform Key Management Service * 'aws' - Amazon Web Service Key Management Service * 'ikp' - IBM Key Protect Key Management Service * 'barbican' - Barbican Key Management Service
uuid	string	

Example request

```
{
  "configuration": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563434"
  },
  "location": "string",
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

Error Code	Description
262155	This operation requires an effective cluster version of 9.14.0 or later.
65536203	Internal error. Failed to generate SVM key. Cluster key database is not initialized.
65536204	Internal error. Failed to generate SVM key. Cluster key encryption key is not found.
65536207	Internal error. Failed to store SVM key.
65536212	Internal error. Failed to delete SVM volume key.
65536217	Internal error. Failed to delete key from cryptomod.
65536602	Cannot perform enable/switch while nodes are out of quorum.
65536856	No external key management server configured for SVM.
65536882	Internal error. UUID is missing for the volume.
65536883	Internal error. Volume encryption key is missing.
65536884	Internal error. Volume encryption key is invalid for the volume.
65536889	Internal error. The volume has an invalid encryption blob.
65536890	Internal error. Failed to generate VDEK blob.
65536973	Internal error. Volume DSID is missing for the volume.
65536987	One or more key servers are unavailable.
65537527	Internal error. Failed to rewrap SVM key encryption key.
65537533	Internal error. Failed to unwrap SVM key encryption key.
65537605	Failed to establish connectivity with the cloud key management service.
65538908	The specified keystore configuration UUID either does not exist or corresponds to a keystore configuration that is not supported by this operation.
65538909	A value for enabled is required.
65538910	Disabling an enabled configuration through this method is currently not supported.
65539200	The key custodian was not provided with an external key value store.
65539201	Failed to encrypt.

Error Code	Description
65539205	This command does not support enabling key manager configurations with the specified keystore type.
65539206	The SVM associated with the supplied keystore UUID already has a keystore configuration enabled. This command does not support migrating from configurations of that keystore type".
65539207	The specified keystore configuration does not exist.
65539212	Cannot switch the enabled keystore configuration when it is not in the 'active' or 'switching' state.
65539218	The specified keystore configuration is already enabled.
65539222	Switching between configurations of different keystore types is not supported for data SVMs.
65539416	Internal error. Failed to parse key value store response.
65539442	Internal error. Failed to generate AES blob.
65539444	Internal error. Failed to update the VDEK blob.
65539513	An effective cluster version of ONTAP 9.16.1 or later is required to enable an inactive key manager on the admin SVM.
65539514	This command does not support enabling key manager configurations with the specified keystore type on the admin SVM.
65539515	Cannot switch keystore types on the admin SVM. The keystore type for the invalid configuration must be OKM and the enabled configuration must be KMIP, or vice versa.
65539518	Internal error. Cannot find the enabled configuration.
65539520	Cannot enable the Onboard Key Manager on the admin SVM because an inactive Onboard Key Manager already exists on the admin SVM.
65539534	Cannot switch admin SVM Key Manager when system root volumes are present.
65539535	Failed to find unwrapped key on any nodes.
65539536	Internal error. Failed to find the existing wrapped key blob for the volume.
65539538	SVM-KEK not created for the SVM.
65539539	SVM-KEK not restored for SVM.
65539583	Cannot switch to the Onboard Key Manager when the external key manager has a policy associated with it

Error Code	Description
65539585	Cannot enable an external key manager on the admin SVM because an inactive external key manager already exists on the admin SVM.
65539590	Cannot switch to the Onboard Key Manager if there are more than two NSE-AKs in the cluster.
65539591	Cannot switch to the Onboard Key Manager if there are fewer than two NSE-AKs in the cluster.
65539704	The key manager cannot be configured because the SVM has NAE volumes.
65539837	The key manager configured does not have any volumes to migrate.
65539838	Cannot migrate to a cloud key manager when the external key manager has a policy associated with it.
65539839	Cannot migrate to a cloud key manager when the key manager is not in a mixed state.
65539840	Failed to clean up the keys stored on the external key servers.
65539842	Failed to restore the SVM-KEK.
65539845	Cannot migrate SVM volumes to the Onboard Key Manager when the key manager is not in the mixed or active state.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

configuration

Security keystore object reference.

Name	Type	Description
name	string	Name of the configuration.
uuid	string	Keystore UUID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

security_keystore

Name	Type	Description
configuration	configuration	Security keystore object reference.
enabled	boolean	Indicates whether the configuration is enabled.
location	string	Indicates whether the keystore is onboard or external. * 'onboard' - Onboard Key Database * 'external' - External Key Database, including KMIP and Cloud Key Management Systems

Name	Type	Description
state	string	State of the keystore: * 'active' - The key manager is active and serving new and existing keys. * 'mixed' - The key manager has a mixed configuration. New keys can't be created. * 'svm_kek_rekey' - An SVM key encryption key (KEK) rekey is in progress. New keys can't be created. * 'blocked' - The key manager is blocked and cannot serve new and existing keys. * 'switching' - Switching the enabled key manager keystore configuration. Some operations are blocked. * 'initializing' - The key manager is being initialized. All operations are blocked. * 'disabling' - The key manager is being disabled. All operations are blocked.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of keystore that is configured: * 'okm' - Onboard Key Manager * 'kmip' - External Key Manager * 'akv' - Azure Key Vault Key Management Service * 'gcp' - Google Cloud Platform Key Management Service * 'aws' - Amazon Web Service Key Management Service * 'ikp' - IBM Key Protect Key Management Service * 'barbican' - Barbican Key Management Service
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage security login messages

Security login messages endpoint overview

Overview

You can use this API to display and manage the login messages configuration. The GET request retrieves all of the login messages in the cluster. GET operations on /security/login/messages/{uuid} retrieve the login messages configuration by UUID. PATCH operations on /security/login/messages/{uuid} update the login messages configuration by UUID.
+

Examples

Retrieving all of the login messages in the cluster

```
# The API:
/api/security/login/messages

# The call:
curl -X GET "https://<mgmt-ip>/api/security/login/messages?fields=*" -H
"accept: application/hal+json"

# The response:
{
```

```
"records": [
  {
    "uuid": "2581e5aa-9fe3-11e8-b309-005056bbef18",
    "scope": "cluster",
    "banner": "*** WARNING: DO NOT PROCEED IF YOU ARE NOT AUTHORIZED!
****\n",
    "message": "#### Welcome to Cluster X ####\n",
    "show_cluster_message": true,
    "_links": {
      "self": {
        "href": "/api/security/login/messages/2581e5aa-9fe3-11e8-b309-
005056bbef18"
      }
    }
  },
  {
    "uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
    "scope": "svm",
    "svm": {
      "uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
      "name": "svm1"
    },
    "message": "#### Welcome to SVM1 ####\n",
    "show_cluster_message": true,
    "_links": {
      "self": {
        "href": "/api/security/login/messages/7b1b3715-9ffa-11e8-a5dd-
005056bbef18"
      }
    }
  },
  {
    "uuid": "8ddee11e-a58c-11e8-85e0-005056bbef18",
    "scope": "svm",
    "svm": {
      "uuid": "8ddee11e-a58c-11e8-85e0-005056bbef18",
      "name": "svm3"
    },
    "banner": "*** WARNING: This system is for the use of authorized users
only. ****\n",
    "_links": {
      "self": {
        "href": "/api/security/login/messages/8ddee11e-a58c-11e8-85e0-
005056bbef18"
      }
    }
```

```
  },
  {
    "uuid": "f7e41c99-9ffa-11e8-a5dd-005056bbef18",
    "scope": "svm",
    "svm": {
      "uuid": "f7e41c99-9ffa-11e8-a5dd-005056bbef18",
      "name": "svm2"
    },
    "_links": {
      "self": {
        "href": "/api/security/login/messages/f7e41c99-9ffa-11e8-a5dd-
005056bbef18"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/security/login/messages?fields=*"
  }
}
}
```


Retrieving the login messages configuration at the cluster scope

```
# The API:
/api/security/login/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/login/messages?scope=cluster&fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "2581e5aa-9fe3-11e8-b309-005056bbef18",
    "scope": "cluster",
    "banner": "*** WARNING: DO NOT PROCEED IF YOU ARE NOT AUTHORIZED!
****\n",
    "message": "#### Welcome to Cluster X ####\n",
    "show_cluster_message": true,
    "_links": {
      "self": {
        "href": "/api/security/login/messages/2581e5aa-9fe3-11e8-b309-
005056bbef18"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?scope=cluster&fields=*"
  }
}
}
```

Retrieving the login banner configured at the cluster scope

```
# The API:
/api/security/login/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/login/messages?scope=cluster&fields=banner" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "2581e5aa-9fe3-11e8-b309-005056bbef18",
    "scope": "cluster",
    "banner": "*** WARNING: DO NOT PROCEED IF YOU ARE NOT AUTHORIZED!
****\n",
    "_links": {
      "self": {
        "href": "/api/security/login/messages/2581e5aa-9fe3-11e8-b309-
005056bbef18"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?scope=cluster&fields=banner"
  }
}
}
```

Retrieving the login messages configuration of a specific SVM

```
# The API:
/api/security/login/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/security/login/messages?svm.name=svm1&fields=*" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
    "scope": "svm",
    "svm": {
      "uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
      "name": "svm1"
    },
    "message": "#### Welcome to SVM1 ####\n",
    "show_cluster_message": true,
    "_links": {
      "self": {
        "href": "/api/security/login/messages/7b1b3715-9ffa-11e8-a5dd-
005056bbef18"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?svm.name=svm1&fields=*"
  }
}
}
```

Retrieving the login messages configuration by UUID, including all fields

```
# The API:
/api/security/login/messages/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/security/login/messages/7b1b3715-9ffa-
11e8-a5dd-005056bbef18?fields=*" -H "accept: application/hal+json"

# The response:
{
"uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
"scope": "svm",
"svm": {
  "uuid": "7b1b3715-9ffa-11e8-a5dd-005056bbef18",
  "name": "svm1"
},
"message": "#### Welcome to SVM1 ####\n",
"show_cluster_message": true,
"_links": {
  "self": {
    "href": "/api/security/login/messages/7b1b3715-9ffa-11e8-a5dd-
005056bbef18"
  }
}
}
```

Configuring the login banner in a cluster

```
# The API:
/api/security/login/messages

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/security/login/messages?scope=cluster" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"banner\": \"You are entering secure area.\" }"

# The response:
{
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?scope=cluster"
  }
}
}
```

Configuring the message of the day (MOTD) in a cluster

```
# The API:
/api/security/login/messages

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/security/login/messages?scope=cluster" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"message\": \"Welcome to Cluster X\",  \"show_cluster_message\": true }"

# The response:
{
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?scope=cluster"
  }
}
}
```

Clearing the login banner and message of the day (MOTD) in a cluster

```
# The API:
/api/security/login/messages

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/security/login/messages?scope=cluster" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"banner\": \"\", \"message\": \"\" }"

# The response:
{
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?scope=cluster"
  }
}
}
```

Configuring the login messages for a specific SVM

```
# The API:
/api/security/login/messages

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/security/login/messages?svm.name=svm1" -H  "accept:
application/hal+json" -H  "Content-Type: application/json" -d "{
\"banner\" : \"AUTHORIZED ACCESS ONLY\", \"message\": \"WELCOME!\" }"

# The response:
{
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/messages?svm.name=svm1"
  }
}
}
```

Configuring the login messages by UUID

```
# The API:
/api/security/login/messages/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/login/messages/7b1b3715-
9ffa-11e8-a5dd-005056bbef18" -H  "accept: application/hal+json" -H
"Content-Type: application/json" -d "{ \"banner\" : \"AUTHORIZED ACCESS
ONLY\", \"message\": \"WELCOME!\" }"
```

Clearing the login messages configuration by UUID

```
# The API:
/api/security/login/messages/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/login/messages/7b1b3715-
9ffa-11e8-a5dd-005056bbef18" -H "accept: application/hal+json" -H
"Content-Type: application/json" -d "{ \"banner\": \"\", \"message\": \"\"
}"
```

Retrieve the login banner and messages of the day

GET `/security/login/messages`

Introduced In: 9.6

Retrieves the login banner and messages of the day (MOTD) configured in the cluster and in specific SVMs.

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
scope	string	query	False	Filter by scope
message	string	query	False	Filter by message • maxLength: 2048 • minLength: 0
banner	string	query	False	Filter by banner • maxLength: 2048 • minLength: 0
uuid	string	query	False	Filter by uuid
show_cluster_message	boolean	query	False	Filter by show_cluster_message

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[login_messages]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "banner": "string",
      "message": "string",
      "scope": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

login_messages

The login banner and message of the day (MOTD) configuration.

Name	Type	Description
_links	_links	

Name	Type	Description
banner	string	The login banner text. This message is displayed during SSH and console device login just before the password prompt displays. When configured, a cluster-level login banner is used for every incoming connection. Each data SVM can override the cluster-level banner to instead display when you log into the SVM. To restore the default setting for a data SVM, set the banner to an empty string. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.
message	string	The message of the day (MOTD). This message appears just before the clustershell prompt after a successful login. When configured, the cluster message displays first. If you log in as a data SVM administrator, the SVM message is then printed. The cluster-level MOTD can be disabled for a given data SVM using the "show_cluster_message" property. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".

Name	Type	Description
show_cluster_message	boolean	Specifies whether to show a cluster-level message before the SVM message when logging in as an SVM administrator. This setting can only be modified by cluster administrators. Optional in the PATCH body.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier (ID) of the login messages configuration.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a login message configuration by UUID

GET `/security/login/messages/{uuid}`

Introduced In: 9.6

Retrieves the login messages configuration by UUID.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Login messages configuration UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
banner	string	The login banner text. This message is displayed during SSH and console device login just before the password prompt displays. When configured, a cluster-level login banner is used for every incoming connection. Each data SVM can override the cluster-level banner to instead display when you log into the SVM. To restore the default setting for a data SVM, set the banner to an empty string. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.

Name	Type	Description
message	string	The message of the day (MOTD). This message appears just before the clustershell prompt after a successful login. When configured, the cluster message displays first. If you log in as a data SVM administrator, the SVM message is then printed. The cluster-level MOTD can be disabled for a given data SVM using the "show_cluster_message" property. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
show_cluster_message	boolean	Specifies whether to show a cluster-level message before the SVM message when logging in as an SVM administrator. This setting can only be modified by cluster administrators. Optional in the PATCH body.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The unique identifier (ID) of the login messages configuration.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "banner": "string",
  "message": "string",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a login message configuration

PATCH `/security/login/messages/{uuid}`

Introduced In: 9.6

Updates the login messages configuration.
There are no required fields. An empty body makes no modifications.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Login messages configuration UUID

Request Body

Name	Type	Description
banner	string	The login banner text. This message is displayed during SSH and console device login just before the password prompt displays. When configured, a cluster-level login banner is used for every incoming connection. Each data SVM can override the cluster-level banner to instead display when you log into the SVM. To restore the default setting for a data SVM, set the banner to an empty string. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.

Name	Type	Description
message	string	The message of the day (MOTD). This message appears just before the clustershell prompt after a successful login. When configured, the cluster message displays first. If you log in as a data SVM administrator, the SVM message is then printed. The cluster-level MOTD can be disabled for a given data SVM using the "show_cluster_message" property. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
show_cluster_message	boolean	Specifies whether to show a cluster-level message before the SVM message when logging in as an SVM administrator. This setting can only be modified by cluster administrators. Optional in the PATCH body.
uuid	string	The unique identifier (ID) of the login messages configuration.

Example request

```
{
  "banner": "string",
  "message": "string",
  "scope": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error codes	Description
10225636	Only a cluster administrator can modify the `show_cluster_message` property.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

login_messages

The login banner and message of the day (MOTD) configuration.

Name	Type	Description
banner	string	The login banner text. This message is displayed during SSH and console device login just before the password prompt displays. When configured, a cluster-level login banner is used for every incoming connection. Each data SVM can override the cluster-level banner to instead display when you log into the SVM. To restore the default setting for a data SVM, set the banner to an empty string. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.

Name	Type	Description
message	string	The message of the day (MOTD). This message appears just before the clustershell prompt after a successful login. When configured, the cluster message displays first. If you log in as a data SVM administrator, the SVM message is then printed. The cluster-level MOTD can be disabled for a given data SVM using the "show_cluster_message" property. New lines are supplied as either LF or CRLF but are always returned as LF. Optional in the PATCH body.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
show_cluster_message	boolean	Specifies whether to show a cluster-level message before the SVM message when logging in as an SVM administrator. This setting can only be modified by cluster administrators. Optional in the PATCH body.
uuid	string	The unique identifier (ID) of the login messages configuration.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and create TOTP profiles

Security login totps endpoint overview

Overview

This API configures the TOTP(Time based OTP) profile for user accounts for secure shell (SSH) access.
Prerequisites:
You must configure TOTP as a secondary authentication method in /security/accounts when creating users.
You must have a TOTP application that you can use to get TOTP keys.
You are only allowed to create a TOTP profile for yourself, not for others.
Admin cannot create TOTP profiles for any users.

Examples

Creating a TOTP profile for cluster-scoped user accounts

Specify the user account name and comment in the body of the POST request. The owner.uuid or owner.name are not required for a cluster-scoped user account.

```
# The API:
POST "/api/security/login/totps"

# The call:
curl -k https://<mgmt-ip>/api/security/login/totps --request POST --data
'{ "account": { "name": "pubuser2" },"comment": "Cserver-Creation"}'

# The response:
{
"num_records": 1,
"records": [
{
  "owner": {
    "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
```

```
      }
    }
  },
  "account": {
    "name": "pubuser2"
  },
  "secret_key": "DRY5CAJGTQCL5TV4D3UAMYXJFM",
  "install_url":
"https://www.google.com/chart?chs=200x200&chld=M&#124;0&cht=qr&chl=otpauth
://totp/root@node1%3Fsecret%3DDRY5CAJGTQCL5TV4D3UAMYXJFM%26issuer%3Dnode1"
,
  "verification_code": "946090",
  "emergency_codes": [
    "54200192",
    "10418385",
    "52726505",
    "41704451",
    "20744310"
  ],
  "_links": {
    "self": {
      "href": "/api/security/login/totps/b009a9e7-4081-b576-7575-
ada21efcaf16/pubuser2"
    }
  }
}
 ]
}
```


Creating a TOTP profile for SVM-scoped user accounts

For an SVM-scoped account, specify either the SVM name as the owner.name or the SVM UUID as the owner.uuid along with other parameters for the user account. These parameters indicate the SVM that contains the user account for the TOTP profile being created and can be obtained from the response body of the GET request performed on the API "/api/svm/svms".

```
# The API:
POST "/api/security/login/totps"

# The call:
curl -k https://<mgmt-ip>/api/security/login/totps --request POST --data
'{ "account": { "name": "pubuser4" },"comment": "Vserver-
Creation","owner.name":"vs0" }'

# The response:
{
```

```
"num_records": 1,
"records": [
{
  "owner": {
    "uuid": "b019a9e7-4081-b576-7575-ada21efcaf16",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b019a9e7-4081-b576-7575-ada21efcaf16"
      }
    }
  },
  "account": {
    "name": "pubuser4"
  },
  "secret_key": "DRY5CAJGTQCL5TV4D3UAMYXJFM",
  "install_url":
"https://www.google.com/chart?chs=200x200&chld=M&#124;0&cht=qr&chl=otpauth
://totp/root@node1%3Fsecret%3DDRY5CAJGTQCL5TV4D3UAMYXJFM%26issuer%3Dnode1"
,
  "verification_code": "946090",
  "emergency_codes": [
    "54200192",
    "10418385",
    "52726505",
    "41704451",
    "20744310"
  ],
  "_links": {
    "self": {
      "href": "/api/security/login/totps/b019a9e7-4081-b576-7575-
ada21efcaf16/pubuser4"
    }
  }
}
 ]
}
```


Retrieving the configured TOTP profile for user accounts

Retrieves the TOTP profiles associated with the user accounts or a filtered list (for a specific user account name, a specific SVM and so on).

```
# The API:
GET "/api/security/login/totps"

# The call to retrieve TOTP profiles associated with TOTP configured user
accounts in the cluster:
curl -k https://<mgmt-ip>/api/security/login/totps

# the response:
{
"records": [
{
  "owner": {
    "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
      }
    }
  },
  "account": {
    "name": "pubuser2",
    "_links": {
      "self": {
        "href": "/api/security/accounts/b009a9e7-4081-b576-7575-
ada21efcaf16/pubuser2"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/security/login/totps/b009a9e7-4081-b576-7575-
ada21efcaf16/pubuser2"
    }
  }
}
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/login/totps"
  }
}
}
```

Retrieve TOTP profiles configured for user accounts

GET `/security/login/totps`

Introduced In: 9.13

Retrieves the TOTP profiles configured for user accounts.

Related ONTAP commands

- `security login totp show`

Learn more

- DOC /security/login/totps
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
sha_fingerprint	string	query	False	Filter by sha_fingerprint
enabled	boolean	query	False	Filter by enabled
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
scope	string	query	False	Filter by scope
comment	string	query	False	Filter by comment
account.name	string	query	False	Filter by account.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[totp]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "account": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "joe.smith"
      },
      "comment": "string",
      "enabled": "",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string",
      "sha_fingerprint": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

account_reference

Name	Type	Description
_links	_links	
name	string	User account

owner

Owner name and UUID that uniquely identifies the TOTP profile.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

totp

TOTP profile for the user account used to access SSH.

Name	Type	Description
_links	_links	

Name	Type	Description
account	account_reference	
comment	string	Optional comment for the TOTP profile.
enabled	boolean	Status of the TOTP profile.
owner	owner	Owner name and UUID that uniquely identifies the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create the TOTP profile for a user account

POST `/security/login/totps`

Introduced In: 9.13

Creates a TOTP profile for a user account.

Required properties

- `owner.uuid` - Account owner UUID.
- `account.name` - Account user name.

Related ONTAP commands

- `security login totp create`

Learn more

- DOC /security/login/totps
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
account	account_reference	
comment	string	Optional comment for the TOTP profile.
owner	owner	Owner name and UUID that uniquely identifies the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

Example request

```
{
  "account": {
    "name": "joe.smith"
  },
  "comment": "string",
  "enabled": "",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "sha_fingerprint": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[totp_post]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "account": {
        "name": "joe.smith"
      },
      "comment": "string",
      "emergency_codes": "17503785",
      "enabled": 1,
      "install_url": "string",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string",
      "secret_key": "string",
      "sha_fingerprint": "string",
      "verification_code": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
144834561	TOTP is not configured for the user.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

account_reference

Name	Type	Description
name	string	User account

owner

Owner name and UUID that uniquely identifies the TOTP profile.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

totp

TOTP profile for the user account used to access SSH.

Name	Type	Description
account	account_reference	
comment	string	Optional comment for the TOTP profile.
owner	owner	Owner name and UUID that uniquely identifies the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Name	Type	Description
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

totp_post

Response object of the TOTP profile creation.

Name	Type	Description
account	account_reference	
comment	string	Optional comment for the TOTP profile.
emergency_codes	array[string]	TOTP profile emergency codes for a user. These codes are for emergency use when a user cannot access 2FA codes through other means.
install_url	string	TOTP profile installation URL for a user.
owner	owner	Owner name and UUID that uniquely identifies the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
secret_key	string	TOTP profile secret key for a user.
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.
verification_code	string	TOTP profile verification code for a user.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage TOTP profiles

Security login totps owner.uuid account.name endpoint overview

Overview

This API configures the TOTP profile for user accounts.
Specify the owner UUID and the account user name. The owner UUID corresponds to the UUID of the SVM containing the user account associated with the TOTP profile and can be obtained from the response body of the GET request performed on the API "`/api/svm/svms".

Examples

Retrieving the specific configured TOTP profile for user accounts

```
# The API:
GET "/api/security/login/totps/{owner.uuid}/{account.name}"

# The call:
curl -k https://<mgmt-ip>/api/security/login/totps/513a78c7-8c13-11e9-
8f78-005056bbf6ac/pubuser4

# the response:
{
"owner": {
    "uuid": "b009a9e7-4081-b576-7575-ada21efcaf16",
    "name": "Default",
  "_links": {
    "self": {
      "href": "/api/svm/svms/b009a9e7-4081-b576-7575-ada21efcaf16"
    }
  }
},
"account": {
  "name": "pubuser2",
  "_links": {
    "self": {
      "href": "/api/security/accounts/b009a9e7-4081-b576-7575-
ada21efcaf16/pubuser2"
    }
  }
},
"sha_fingerprint":
"21364f5417600e3d9d6a7ac6c05dd244aed9f15dce6786a2c89399a41ff0fdb0",
"scope": "cluster",
"_links": {
  "self": {
    "href": "/api/security/login/totps/b009a9e7-4081-b576-7575-
ada21efcaf16/pubuser2"
  }
}
}
```

Modifying the TOTP profile for a user account

```
# The API:
PATCH "/api/security/login/totps/{owner.uuid}/{account.name}"

# The call:
curl -k "https://<mgmt-ip>/api/security/login/totps/6865196a-8b59-11ed-
874c-0050568e36ed/ysadmin" --request PATCH --data "{  \"comment\":
\"Testing\",  \"enabled\": false}"

# the response:
{}
```

Deleting the TOTP profile for user accounts

```
# The API:
DELETE "/api/security/login/totps/{owner.uuid}/{account.name}"

# The call:
curl -k https://<mgmt-ip>/api/security/login/totps/d49de271-8c11-11e9-
8f78-005056bbf6ac/pubuser1 --request DELETE

# the response:
{}
```

Delete the TOTP profile for a user account

DELETE `/security/login/totps/{owner.uuid}/{account.name}`

Introduced In: 9.13

Deletes the TOTP profile for a user account.

Related ONTAP commands

- `security login totp delete`

Learn more

- DOC /security/login/totps/{owner.uuid}/{account.name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID.

Name	Type	In	Required	Description
account.name	string	path	True	Account user name.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the TOTP profile for a user account

GET `/security/login/totps/{owner.uuid}/{account.name}`

Introduced In: 9.13

Retrieves the TOTP profile configured for a user account.

Related ONTAP commands

- `security login totp show`

Learn more

- DOC /security/login/totps/{owner.uuid}/{account.name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID.
account.name	string	path	True	Account user name.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
account	account_reference	
comment	string	Optional comment for the TOTP profile.
enabled	boolean	Status of the TOTP profile.
owner	owner	Owner name and UUID that uniquely identifies the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "account": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "joe.smith"
  },
  "comment": "string",
  "enabled": "",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string",
  "sha_fingerprint": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

account_reference

Name	Type	Description
_links	_links	
name	string	User account

owner

Owner name and UUID that uniquely identifies the TOTP profile.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a TOTP profile for a user account

PATCH `/security/login/totps/{owner.uuid}/{account.name}`

Introduced In: 9.13

Updates a TOTP user account.

Related ONTAP commands

- `security login totp modify`

Learn more

- DOC /security/login/totps/{owner.uuid}/{account.name}
- DOC /security/accounts

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Account owner UUID
account.name	string	path	True	User account name

Request Body

Name	Type	Description
comment	string	Optional comment for the TOTP profile.
enabled	boolean	Status of the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Name	Type	Description
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

Example request

```
{
  "comment": "string",
  "enabled": "",
  "scope": "string",
  "sha_fingerprint": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
144834564	Only users with the admin role are allowed to modify the TOTP status.
144834565	Invalid option for the field -enabled
144834566	The user does not have a TOTP configuration available for modification.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

account_reference

Name	Type	Description
name	string	User account

owner

Owner name and UUID that uniquely identifies the TOTP profile.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

totp

TOTP profile for the user account used to access SSH.

Name	Type	Description
comment	string	Optional comment for the TOTP profile.
enabled	boolean	Status of the TOTP profile.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
sha_fingerprint	string	SHA fingerprint for the TOTP secret key.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage the multi-admin-verify global setting

Security multi-admin-verify endpoint overview

Overview

These APIs provide information on the multi-admin verification global setting.
The GET API retrieves the object store that contains the global setting values of the multi-admin-verify feature.
The PATCH request is used to modify the multi-admin-verify global setting. All fields are optional for the PATCH request.
Note it is recommended that multi-admin-verify is enabled equally on peered ONTAP clusters.
+

Examples

Retrieving the multi-admin-verify global setting

Retrieves the current multi-admin-verify global setting. If the global setting is not set, default values are returned.
+

```
# The API:
/api/security/multi-admin-verify

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-verify"

# The response:
{
"approval_groups": [
],
"required_approvers": 1,
"enabled": false,
"execution_expiry": "PT1H",
"approval_expiry": "PT1H",
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify"
  }
}
}
```

Updating the multi-admin-verify global setting

The following example updates the multi-admin-verify global settings.
Note that the approval_groups needs to be available in /security/multi-admin-verify/approval-groups before it is set in the global setting.
Note that the total number of approvers in an approval group must be a positive integer more than the number of required approvers. For example, if there are a total of 10 approvers in a group, the required approvers can be set between 1 and 9.
+

```
# The API:
/api/security/multi-admin-verify

# The call:
curl -X PATCH "https://<cluster-ip>/api/security/multi-admin-verify" -d
'{"required_approvers": "1", "enabled": "true", "execution_expiry": "2h",
"approval_expiry": "3h"}'
```

Retrieve a multi-admin-verify configuration

GET `/security/multi-admin-verify`

Introduced In: 9.11

Retrieves the multi-admin-verify configuration.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
approval_expiry	string	Default time for requests to be approved, in ISO-8601 duration format.
approval_groups	array[string]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
enabled	boolean	
execution_expiry	string	Default time for requests to be executed once approved, in ISO-8601 duration format.
required_approvers	integer	The number of required approvers, excluding the user that made the request.

Example response

```
{
  "approval_expiry": "string",
  "approval_groups": [
    "string"
  ],
  "execution_expiry": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Modify a multi-admin-verify configuration

PATCH `/security/multi-admin-verify`

Introduced In: 9.11

Modifies the multi-admin-verify configuration.

Request Body

Name	Type	Description
approval_expiry	string	Default time for requests to be approved, in ISO-8601 duration format.
approval_groups	array[string]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
enabled	boolean	
execution_expiry	string	Default time for requests to be executed once approved, in ISO-8601 duration format.

Name	Type	Description
required_approvers	integer	The number of required approvers, excluding the user that made the request.

Example request

```
{
  "approval_expiry": "string",
  "approval_groups": [
    "string"
  ],
  "execution_expiry": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262309	The feature must be enabled first.
262311	Value must be greater than zero.
262312	Number of required approvers must be less than the total number of unique approvers in the approval-groups.
262313	Number of unique approvers in the approval-groups must be greater than the number of required approvers.
262314	One or more approval groups added do not exist.
262315	Approval-groups must be specified when enabling this feature.
262316	Value must be in the range two minutes to two weeks.
262318	multi-admin-verify requires an effective cluster version of ONTAP 9.11.1 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

multi_admin_verify_config

Name	Type	Description
approval_expiry	string	Default time for requests to be approved, in ISO-8601 duration format.
approval_groups	array[string]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
enabled	boolean	
execution_expiry	string	Default time for requests to be executed once approved, in ISO-8601 duration format.
required_approvers	integer	The number of required approvers, excluding the user that made the request.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and create multi-admin-verify approval groups

Security multi-admin-verify approval-groups endpoint overview

Overview

A group of users can be defined in a cluster server context.
Approval groups can be associated with a rule or global setting from which the associated request can retrieve approvals.
+

Examples

Creating a multi-admin-verify approval group

Creates an approval group for a specified SVM for a specified list of ONTAP users.
+

```
# The API:
/api/security/multi-admin-verify/approval-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/security/multi-admin-verify/approval-
groups?return_records=true" -H "accept: application/hal+json" -d '{"name":
"group1", "approvers": ["admin"], "email":
["group1.approvers@email.com"]}'

# The response:
{
"num_records": 1,
"records": [
  {
    "owner": {
      "uuid": "c109634f-7011-11ec-a23d-005056a78fd5",
      "_links": {
        "self": {
          "href": "/api/svm/svms/c109634f-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "name": "group1",
    "approvers": [
      "admin"
    ],
    "email": [
      "group1.approvers@email.com"
    ],
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/approval-
groups/c109634f-7011-11ec-a23d-005056a78fd5/group1"
      }
    }
  }
]
}
```

Retrieving multi-admin-verify approval groups

Displays information about approval groups and the users that are registered with each group.
+

```
# The API:
/api/security/multi-admin-verify/approval-groups

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-
verify/approval-groups"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "name": "group1",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/approval-
groups/52b75787-7011-11ec-a23d-005056a78fd5/group1"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/approval-groups"
  }
}
}
```

Retrieve multi-admin-verify approval groups

GET `/security/multi-admin-verify/approval-groups`

Introduced In: 9.11

Retrieves multi-admin-verify approval groups.

Parameters

Name	Type	In	Required	Description
approvers	string	query	False	Filter by approvers
email	string	query	False	Filter by email
name	string	query	False	Filter by name
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[multi_admin_verify_approval_group]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "approvers": [
        "string"
      ],
      "email": [
        "string"
      ],
      "name": "string",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

The owner of the approval group. The only valid owner is currently the cluster.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_approval_group

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
name	string	Name of the approval group.

Name	Type	Description
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a multi-admin-verify approval group

POST `/security/multi-admin-verify/approval-groups`

Introduced In: 9.11

Creates a multi-admin-verify approval group.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
name	string	Name of the approval group.
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

Example request

```
{
  "approvers": [
    "string"
  ],
  "email": [
    "string"
  ],
  "name": "string",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[multi_admin_verify_approval_group]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "approvers": [
        "string"
      ],
      "email": [
        "string"
      ],
      "name": "string",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262309	The feature must be enabled first.
262333	Invalid user in approval group.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

The owner of the approval group. The only valid owner is currently the cluster.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_approval_group

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
name	string	Name of the approval group.
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage multi-admin-verify approval groups

Security multi-admin-verify approval-groups owner.uuid name endpoint overview

Overview

These APIs provide information about a specific multi-admin verification approval-group.
A group of users can be defined in a cluster server context.
Approval groups can be associated with a rule or global setting from which the associated request can retrieve approvals.
+

Examples

Retrieving a multi-admin-verify approval group

Displays information about a specific approval group and the users that are registered within that group.
+

```
# The API:
/api/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-
verify/approval-groups/52b75787-7011-11ec-a23d-005056a78fd5/group1"

# The response:
{
"owner": {
  "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
  "name": "cluster1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
    }
  }
},
"name": "group1",
"approvers": [
  "admin"
],
"email": [
  "group1.approvers@email.com"
],
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/approval-groups/52b75787-
7011-11ec-a23d-005056a78fd5/group1"
  }
}
}
```

Updating a multi-admin-verify approval group

Modifies attributes of an approval group.
+

```
# The API:
/api/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}

# The call:
curl -X PATCH "https://<cluster-ip>/api/security/multi-admin-
verify/approval-groups/52b75787-7011-11ec-a23d-005056a78fd5/group1" -d
'{"approvers": ["admin1"], "email": ["group1.approvers.new@email.com"]}'
```

Deleting a multi-admin-verify approval group

Deletes the specified approval group.
+

```
# The API:
/api/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}

# The call:
curl -X DELETE "https://<cluster-ip>/api/security/multi-admin-
verify/approval-groups/52b75787-7011-11ec-a23d-005056a78fd5/group1"
```

Delete a multi-admin-verify approval group

DELETE `/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}`

Introduced In: 9.11

Deletes a multi-admin-verify approval group.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
name	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262319	Cannot delete an approval group that is in the list of global approval groups.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a multi-admin-verify approval group

GET `/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}`

Introduced In: 9.11

Retrieves a multi-admin-verify approval group.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
name	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
name	string	Name of the approval group.
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

Example response

```
{
  "approvers": [
    "string"
  ],
  "email": [
    "string"
  ],
  "name": "string",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

The owner of the approval group. The only valid owner is currently the cluster.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a multi-admin-verify approval group

PATCH `/security/multi-admin-verify/approval-groups/{owner.uuid}/{name}`

Introduced In: 9.11

Updates a multi-admin-verify approval group.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
name	string	path	True	

Request Body

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

Example request

```
{
  "approvers": [
    "string"
  ],
  "email": [
    "string"
  ],
  "owner": {
    "name": "svm1"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262331	At least one approver is required.
262332	An add or remove list is required.
262333	Invalid user in approval group.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

The owner of the approval group. The only valid owner is currently the cluster.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.

multi_admin_verify_approval_group

Name	Type	Description
approvers	array[string]	List of users that can approve a request.
email	array[string]	Email addresses that are notified when a request is created, approved, vetoed, or executed.
owner	owner	The owner of the approval group. The only valid owner is currently the cluster.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage multi-admin-verify approval requests

Security multi-admin-verify requests endpoint overview

Overview

These APIs provide information about multi-admin verification requests.
If you need to execute a command that is protected by a multi-admin rule, you must first submit a request to be allowed to execute the command.
The request must then be approved by the designated approvers according to the rule associated with the command.
+

Examples

Creating a multi-admin-verify request

Creates a request for the specified ONTAP operation.
+

```
# The API:
/api/security/multi-admin-verify/requests

# The call:
curl -X POST "https://<mgmt-ip>/api/security/multi-admin-
verify/requests?return_records=true" -H "accept: application/hal+json" -d
'{"operation": "volume delete", "query": "-vserver vs0 -volume v1",
"permitted_users": ["user1","user2"]}'

# The response:
{
"num_records": 1,
"records": [
  {
    "index": 10,
    "operation": "volume delete",
    "query": "-vserver vs0 -volume v1",
    "state": "pending",
    "required_approvers": 2,
    "pending_approvers": 2,
    "execute_on_approval": false,
    "permitted_users": [
      "user1",
      "user2"
    ],
    "user_requested": "admin",
    "owner": {
      "uuid": "c1483186-6e73-11ec-bc92-005056a7ad04",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/c1483186-6e73-11ec-bc92-005056a7ad04"
        }
      }
    },
    "create_time": "2022-01-06T16:59:49-05:00",
    "approve_expiry_time": "2022-01-06T19:59:49-05:00",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/requests/10"
      }
    }
  }
]
}
```

Retrieving multi-admin-verify requests

Retrieves information about multi-admin verification requests.
+

```
# The API:
/api/security/multi-admin-verify/requests

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-
verify/requests"

# The response:
{
"records": [
  {
    "index": 1,
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/requests/1"
      }
    }
  },
  {
    "index": 2,
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/requests/2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/requests"
  }
}
}
```

Retrieve multi-admin-verify requests

GET `/security/multi-admin-verify/requests`

Introduced In: 9.11

Retrieves multi-admin-verify requests.

Parameters

Name	Type	In	Required	Description
user_requested	string	query	False	Filter by user_requested
execute_on_approval	boolean	query	False	Filter by execute_on_approval • Introduced in: 9.13
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
potential_approvers	string	query	False	Filter by potential_approvers
execution_expiry_time	string	query	False	Filter by execution_expiry_time
state	string	query	False	Filter by state
required_approvers	integer	query	False	Filter by required_approvers
approve_time	string	query	False	Filter by approve_time
comment	string	query	False	Filter by comment
user_vetoed	string	query	False	Filter by user_vetoed
query	string	query	False	Filter by query
permitted_users	string	query	False	Filter by permitted_users

Name	Type	In	Required	Description
operation	string	query	False	Filter by operation
index	integer	query	False	Filter by index
create_time	string	query	False	Filter by create_time
approved_users	string	query	False	Filter by approved_users
pending_approvers	integer	query	False	Filter by pending_approvers
approve_expiry_time	string	query	False	Filter by approve_expiry_time
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[multi_admin_verify_request]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "approve_expiry_time": "string",
      "approve_time": "string",
      "approved_users": [
        "string"
      ],
      "comment": "string",
      "create_time": "string",
      "execution_expiry_time": "string",
      "index": 0,
      "operation": "string",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "pending_approvers": 0,
      "permitted_users": [
        "string"
      ],
      "potential_approvers": [
        "string"
      ],
      "query": "string",
      "required_approvers": 0,
      "state": "string",
      "user_requested": "string",
      "user_vetoed": "string"
    }
```

```
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_request

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
comment	string	Optional user-provided comment that is sent to the approval-group email indicating why the request was made.

Name	Type	Description
create_time	string	
execute_on_approval	boolean	Specifies that the operation is executed automatically on final approval.
execution_expiry_time	string	
index	integer	Unique index that represents a request.
operation	string	The command to execute.
owner	owner	The owner of the request. This can identify the cluster or an SVM.
pending_approvers	integer	The number of approvers remaining that are required to approve.
permitted_users	array[string]	List of users that can execute the operation once approved. If not set, any authorized user can perform the operation.
potential_approvers	array[string]	The users that are able to approve the request.
query	string	Identifies the specific entry upon which the user wants to operate.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.

Name	Type	Description
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a multi-admin-verify request

POST `/security/multi-admin-verify/requests`

Introduced In: 9.11

Creates a multi-admin-verify request.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
comment	string	Optional user-provided comment that is sent to the approval-group email indicating why the request was made.
create_time	string	
execution_expiry_time	string	
index	integer	Unique index that represents a request.
operation	string	The command to execute.
owner	owner	The owner of the request. This can identify the cluster or an SVM.
pending_approvers	integer	The number of approvers remaining that are required to approve.
permitted_users	array[string]	List of users that can execute the operation once approved. If not set, any authorized user can perform the operation.
potential_approvers	array[string]	The users that are able to approve the request.
query	string	Identifies the specific entry upon which the user wants to operate.

Name	Type	Description
required_approvers	integer	The number of required approvers, excluding the user that made the request.
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

Example request

```
{
  "approve_expiry_time": "string",
  "approve_time": "string",
  "approved_users": [
    "string"
  ],
  "comment": "string",
  "create_time": "string",
  "execute_on_approval": true,
  "execution_expiry_time": "string",
  "index": 0,
  "operation": "string",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "pending_approvers": 0,
  "permitted_users": [
    "string"
  ],
  "potential_approvers": [
    "string"
  ],
  "query": "string",
  "required_approvers": 0,
  "state": "string",
  "user_requested": "string",
  "user_vetoed": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[multi_admin_verify_request]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "approve_expiry_time": "string",
      "approve_time": "string",
      "approved_users": [
        "string"
      ],
      "comment": "string",
      "create_time": "string",
      "execute_on_approval": true,
      "execution_expiry_time": "string",
      "index": 0,
      "operation": "string",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "pending_approvers": 0,
      "permitted_users": [
        "string"
      ],
      "potential_approvers": [
        "string"
      ],
      "query": "string",
      "required_approvers": 0,
      "state": "string",
      "user_requested": "string",
      "user_vetoed": "string"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262148	The specified command is not recognized.
262279	Invalid field set.
262304	Too many requests. Delete one before creating another.
262305	Can’t approve non-pending request.
262306	Can’t veto an expired request.
262308	The specified command is not supported by this feature.
262309	The feature must be enabled first.
262311	Value must be greater than zero.
262312	Number of required approvers must be less than the total number of unique approvers in the approval-groups.
262313	Number of unique approvers in the approval-groups must be greater than the number of required approvers.
262326	Failed to parse query.
262327	Failed to crate the request.
262328	There is no matching rule for this request.
262330	Cannot approve/veto a request multiple times.
262334	The parameter specified in the command is not supported.
262337	Cannot approve/veto the user’s own request.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_request

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
comment	string	Optional user-provided comment that is sent to the approval-group email indicating why the request was made.
create_time	string	
execution_expiry_time	string	
index	integer	Unique index that represents a request.
operation	string	The command to execute.
owner	owner	The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
pending_approvers	integer	The number of approvers remaining that are required to approve.
permitted_users	array[string]	List of users that can execute the operation once approved. If not set, any authorized user can perform the operation.
potential_approvers	array[string]	The users that are able to approve the request.
query	string	Identifies the specific entry upon which the user wants to operate.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage a multi-admin-verify approval request

Security multi-admin-verify requests index endpoint overview

Overview

These APIs provide information about a specific multi-admin verification request.
If you need to execute a command that is protected by a multi-admin rule, you must first submit a request to be allowed to execute the command.
The request must then be approved by the designated approvers according to the rule associated with the command.
+

Examples

Retrieving a multi-admin-verify request

Retrieves information about a specific multi-admin verification request.
+

```
# The API:
/api/security/multi-admin-verify/requests/{index}

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-
verify/requests/1"

# The response:
{
"index": 1,
"operation": "security multi-admin-verify modify",
"query": "",
"state": "expired",
"required_approvers": 1,
"pending_approvers": 1,
"execute_on_approval": false,
"permitted_users": [
  "example_user"
],
"user_requested": "admin",
"owner": {
  "uuid": "c1483186-6e73-11ec-bc92-005056a7ad04",
  "name": "cluster1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/c1483186-6e73-11ec-bc92-005056a7ad04"
    }
  }
},
"create_time": "2022-01-05T20:07:09-05:00",
"approve_expiry_time": "2022-01-05T21:07:09-05:00",
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/requests/1"
  }
}
}
```

Updating a multi-admin-verify request

Updates a specific multi-admin-verify request
+

```
# The API:
/api/security/multi-admin-verify/requests/{index}

# The call:
curl -X PATCH "https://<cluster-ip>/api/security/multi-admin-
verify/requests/1" -d '{"state": "approved", "execute_on_approval":
false}'
```

Delete a multi-admin-verify request

DELETE `/security/multi-admin-verify/requests/{index}`

Introduced In: 9.11

Deletes a multi-admin-verify request.

Parameters

Name	Type	In	Required	Description
index	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262336	User not authorized to delete the request.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a multi-admin-verify request

GET `/security/multi-admin-verify/requests/{index}`

Introduced In: 9.11

Retrieves a multi-admin-verify request.

Parameters

Name	Type	In	Required	Description
index	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
comment	string	Optional user-provided comment that is sent to the approval-group email indicating why the request was made.
create_time	string	
execute_on_approval	boolean	Specifies that the operation is executed automatically on final approval.
execution_expiry_time	string	
index	integer	Unique index that represents a request.
operation	string	The command to execute.
owner	owner	The owner of the request. This can identify the cluster or an SVM.
pending_approvers	integer	The number of approvers remaining that are required to approve.

Name	Type	Description
permitted_users	array[string]	List of users that can execute the operation once approved. If not set, any authorized user can perform the operation.
potential_approvers	array[string]	The users that are able to approve the request.
query	string	Identifies the specific entry upon which the user wants to operate.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

Example response


```
{
  "approve_expiry_time": "string",
  "approve_time": "string",
  "approved_users": [
    "string"
  ],
  "comment": "string",
  "create_time": "string",
  "execution_expiry_time": "string",
  "index": 0,
  "operation": "string",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "pending_approvers": 0,
  "permitted_users": [
    "string"
  ],
  "potential_approvers": [
    "string"
  ],
  "query": "string",
  "required_approvers": 0,
  "state": "string",
  "user_requested": "string",
  "user_vetoed": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a multi-admin-verify request

PATCH `/security/multi-admin-verify/requests/{index}`

Introduced In: 9.11

Updates a multi-admin-verify request.

Parameters

Name	Type	In	Required	Description
index	string	path	True	

Request Body

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
create_time	string	
execute_on_approval	boolean	Specifies that the operation is executed automatically on final approval.
execution_expiry_time	string	
index	integer	Unique index that represents a request.
owner	owner	The owner of the request. This can identify the cluster or an SVM.
pending_approvers	integer	The number of approvers remaining that are required to approve.
potential_approvers	array[string]	The users that are able to approve the request.
required_approvers	integer	The number of required approvers, excluding the user that made the request.

Name	Type	Description
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

Example request

```
{
  "approve_expiry_time": "string",
  "approve_time": "string",
  "approved_users": [
    "string"
  ],
  "create_time": "string",
  "execution_expiry_time": "string",
  "index": 0,
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "pending_approvers": 0,
  "potential_approvers": [
    "string"
  ],
  "required_approvers": 0,
  "state": "string",
  "user_requested": "string",
  "user_vetoed": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262309	The feature must be enabled first.
262329	Invalid state. State can be modified to approved, vetoed, or executed.
262337	User not eligible to approve the request.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_request

Name	Type	Description
approve_expiry_time	string	
approve_time	string	
approved_users	array[string]	The users that have approved the request.
create_time	string	
execute_on_approval	boolean	Specifies that the operation is executed automatically on final approval.
execution_expiry_time	string	
index	integer	Unique index that represents a request.
owner	owner	The owner of the request. This can identify the cluster or an SVM.

Name	Type	Description
pending_approvers	integer	The number of approvers remaining that are required to approve.
potential_approvers	array[string]	The users that are able to approve the request.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
state	string	The state of the request. PATCH supports approved and vetoed. The state only changes after setting to approved once no more approvers are required.
user_requested	string	The user that created the request. Automatically set by ONTAP. • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
user_vetoed	string	The user that vetoed the request.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage multi-admin-verify rules

Security multi-admin-verify rules endpoint overview

Overview

Rules define the ONTAP commands (operations) that should be protected by multi-admin approval.
While the feature is turned on, any ONTAP operation that is defined with a rule will be enforced with multi-admin approval to execute the command (operation).
+

Examples

Creating a multi-admin-verify rule

Creates a rule for the specified ONTAP operation.
+

```
# The API:
/api/security/multi-admin-verify/rules

# The call:
curl -X POST "https://<mgmt-ip>/api/security/multi-admin-
verify/rules?return_records=true" -H "accept: application/hal+json" -d
'{"operation": "volume delete", "query": "-vserver vs0",
"required_approvers": 1}'

# The response:
{
"num_records": 1,
"records": [
  {
    "owner": {
      "uuid": "c109634f-7011-11ec-a23d-005056a78fd5",
      "_links": {
        "self": {
          "href": "/api/svm/svms/c109634f-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "volume delete",
    "auto_request_create": true,
    "query": "-vserver vs0",
    "required_approvers": 1,
    "create_time": "2022-01-07T22:14:03-05:00",
    "system_defined": false,
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/c109634f-7011-
11ec-a23d-005056a78fd5/volume%20delete"
      }
    }
  }
]
}
```

Retrieving multi-admin-verify rules

Displays information about multi admin verification rules.
+

```
# The API:
/api/security/multi-admin-verify/rules

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-verify/rules"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security login password",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20login%20password"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security login unlock",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20login%20unlock"
      }
    }
  },
```

```
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify approval-group create",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20approval-
group%20create"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify approval-group delete",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20approval-
group%20delete"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
```

```
      }
    },
    "operation": "security multi-admin-verify approval-group modify",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20approval-
group%20modify"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify approval-group replace",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20approval-
group%20replace"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify modify",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20modify"
      }
```

```
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify rule create",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20rule%20create"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "security multi-admin-verify rule delete",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20rule%20delete"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
```

```
      }
    },
    "operation": "security multi-admin-verify rule modify",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/security%20multi-admin-verify%20rule%20modify"
      }
    }
  },
  {
    "owner": {
      "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
        }
      }
    },
    "operation": "volume delete",
    "_links": {
      "self": {
        "href": "/api/security/multi-admin-verify/rules/52b75787-7011-
11ec-a23d-005056a78fd5/volume%20delete"
      }
    }
  }
],
"num_records": 11,
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/rules"
  }
}
}
```

Retrieve multi-admin-verify rules

GET `/security/multi-admin-verify/rules`

Introduced In: 9.11

Retrieves multi-admin-verify rules.

Parameters

Name	Type	In	Required	Description
system_defined	boolean	query	False	Filter by system_defined
approval_expiry	string	query	False	Filter by approval_expiry
required_approvers	integer	query	False	Filter by required_approvers
create_time	string	query	False	Filter by create_time
operation	string	query	False	Filter by operation
execution_expiry	string	query	False	Filter by execution_expiry
approval_groups.name	string	query	False	Filter by approval_groups.name
query	string	query	False	Filter by query
owner.uuid	string	query	False	Filter by owner.uuid
owner.name	string	query	False	Filter by owner.name
auto_request_create	boolean	query	False	Filter by auto_request_create
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[multi_admin_verify_rule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "approval_expiry": "string",
      "approval_groups": [
        {
          "name": "string"
        }
      ],
      "create_time": "string",
      "execution_expiry": "string",
      "operation": "string",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "query": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

approval_groups

Name	Type	Description
name	string	Name of the approval group.

_links

Name	Type	Description
self	href	

owner

The owner of the rule. The only valid owner is currently the cluster.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_rule

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.

Name	Type	Description
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: • Introduced in: 9.11 • x-nullable: true
create_time	string	
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
operation	string	Command that requires one or more approvals.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a multi-admin-verify rule

POST `/security/multi-admin-verify/rules`

Introduced In: 9.11

Creates a multi-admin-verify rule.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.

Name	Type	Description
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
create_time	string	
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
operation	string	Command that requires one or more approvals.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

Example request

```
{
  "approval_expiry": "string",
  "approval_groups": [
    {
      "name": "string"
    }
  ],
  "create_time": "string",
  "execution_expiry": "string",
  "operation": "string",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "query": "string"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[multi_admin_verify_rule]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "approval_expiry": "string",
      "approval_groups": [
        {
          "name": "string"
        }
      ],
      "create_time": "string",
      "execution_expiry": "string",
      "operation": "string",
      "owner": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "query": "string"
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262148	The specified command is not recognized.
262308	The specified command is not supported by this feature.
262309	The feature must be enabled first.
262311	Value must be greater than zero.

Error Code	Description
262312	Number of required approvers must be less than the total number of unique approvers in the approval-groups.
262313	Number of unique approvers in the approval-groups must be greater than the number of required approvers.
262314	Some approval-groups were not found.
262316	Value must be in the range two minutes to two weeks.
262326	Failed to parse query.
262335	The query string must be contained in either the "operation" or "query" parameters but not in both.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

approval_groups

Name	Type	Description
name	string	Name of the approval group.

href

Name	Type	Description
href	string	

_links

owner

The owner of the rule. The only valid owner is currently the cluster.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

multi_admin_verify_rule

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.

Name	Type	Description
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
create_time	string	
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
operation	string	Command that requires one or more approvals.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage a multi-admin-verify rule

Security multi-admin-verify rules owner.uuid operation endpoint overview

Overview

These APIs provide information about a specific multi-admin verification rule.
Rules define the ONTAP commands (operations) that should be protected by multi-admin approval.
While the feature is turned on, any ONTAP operation that is defined with a rule will be enforced with multi-admin approval to execute the command (operation).
+

Examples

Retrieving a multi-admin-verify rule

Displays information about a specific multi admin verification rule.
+

```
# The API:
/api/security/multi-admin-verify/rules/{owner.uuid}/{operation}

# The call:
curl -X GET "https://<cluster-ip>/api/security/multi-admin-
verify/rules/52b75787-7011-11ec-a23d-005056a78fd5/volume+delete"

# The response:
{
"owner": {
  "uuid": "52b75787-7011-11ec-a23d-005056a78fd5",
  "name": "cluster1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/52b75787-7011-11ec-a23d-005056a78fd5"
    }
  }
},
"operation": "volume delete",
"auto_request_create": true,
"query": "-vserver vs0",
"required_approvers": 1,
"create_time": "2022-01-07T22:14:03-05:00",
"system_defined": false,
"_links": {
  "self": {
    "href": "/api/security/multi-admin-verify/rules/52b75787-7011-11ec-
a23d-005056a78fd5/volume+delete"
  }
}
}
```

Updating a multi-admin-verify rule

Modifies the attributes of the rule.
+

```
# The API:
/api/security/multi-admin-verify/rules/{owner.uuid}/{operation}

# The call:
curl -X PATCH "https://<cluster-ip>/api/security/multi-admin-
verify/rules/52b75787-7011-11ec-a23d-005056a78fd5/volume+delete" -d
'{"required_approvers": 1}'
```

Deleting a multi-admin-verify rule

Deletes the specified approval group.
+

```
# The API:
/api/security/multi-admin-verify/rules/{owner.uuid}/{operation}

# The call:
curl -X DELETE "https://<cluster-ip>/api/security/multi-admin-
verify/rules/52b75787-7011-11ec-a23d-005056a78fd5/volume+delete"
```

Delete a multi-admin-verify rule

DELETE `/security/multi-admin-verify/rules/{owner.uuid}/{operation}`

Introduced In: 9.11

Deletes a multi-admin-verify rule.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
operation	string	path	True	

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262310	System rules cannot be deleted or have their query modified.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a multi-admin-verify rule

GET `/security/multi-admin-verify/rules/{owner.uuid}/{operation}`

Introduced In: 9.11

Retrieves a multi-admin-verify rule.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
operation	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
create_time	string	
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
operation	string	Command that requires one or more approvals.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

Example response

```
{
  "approval_expiry": "string",
  "approval_groups": [
    {
      "name": "string"
    }
  ],
  "create_time": "string",
  "execution_expiry": "string",
  "operation": "string",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "query": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

approval_groups

Name	Type	Description
name	string	Name of the approval group.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

The owner of the rule. The only valid owner is currently the cluster.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a multi-admin-verify rule

PATCH `/security/multi-admin-verify/rules/{owner.uuid}/{operation}`

Introduced In: 9.11

Updates a multi-admin-verify rule.

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	
operation	string	path	True	

Request Body

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
create_time	string	

Name	Type	Description
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

Example request

```
{
  "approval_expiry": "string",
  "approval_groups": [
    {
      "name": "string"
    }
  ],
  "create_time": "string",
  "execution_expiry": "string",
  "owner": {
    "name": "svm1"
  },
  "query": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262310	System rules cannot be deleted or have their query modified.
262311	Value must be greater than zero.
262312	Number of required approvers must be less than the total number of unique approvers in the approval-groups.
262313	Number of unique approvers in the approval-groups must be greater than the number of required approvers.
262316	Value must be in the range two minutes to two weeks.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

approval_groups

Name	Type	Description
name	string	Name of the approval group.

href

Name	Type	Description
href	string	

_links

owner

The owner of the rule. The only valid owner is currently the cluster.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a POST or PATCH method.

multi_admin_verify_rule

Name	Type	Description
approval_expiry	string	Time for requests to be approved, in ISO-8601 duration format. If not set, the global setting is used.
approval_groups	array[approval_groups]	List of approval groups that are allowed to approve requests for rules that don't have approval groups.
auto_request_create	boolean	When true, ONTAP automatically creates a request for any failed operation where there is no matching pending request. • Default value: 1 • Introduced in: 9.11 • x-nullable: true
create_time	string	

Name	Type	Description
execution_expiry	string	Time for requests to be executed once approved, in ISO-8601 duration format. If not set, the global setting is used.
owner	owner	The owner of the rule. The only valid owner is currently the cluster.
query	string	When specified, this property limits the entries that require approvals to those that match the specified query.
required_approvers	integer	The number of required approvers, excluding the user that made the request.
system_defined	boolean	Specifies whether the rule is system-defined or user-defined.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage security roles

Security roles endpoint overview

Overview

ONTAP supports Role Based Access Control (RBAC) wherein a user account must be associated with a role and that role defines the privileges and rights for that user account. A privilege defines the access level of the API or command/command directory path. If a privilege tuple refers to a command/command directory path, it can also be associated with an optional query. The access level specifies the subset of operations a user account can perform from the complete set of API methods {GET, POST, PATCH, and DELETE} or command operations {create, delete, modify, and show}. The optional query specifies the subset of objects that the role is allowed to access. The query can be specified, only if the privilege tuple refers to a command/command directory path. It is defined using one or more parameters of the command/command directory path.

A role can comprise of multiple privilege tuples and each privilege tuple consists of a REST API or command/command directory path, its access level, and an optional query. For a given role, only one type of privilege tuple can be defined. All privilege tuples for a role must contain REST API paths or all privilege tuples for the role must contain command/command directory paths. However, predefined/built-in roles (those defined later) are an exception to this rule.

For example, "role1" might be a role that has a tuple {"access":"all","path":"/api/network/ip"}, which means that a user account with "role1" can perform GET, POST, PATCH, and DELETE requests on the *api/network/ip* API or derived APIs that have *api/network/ip* as the prefix.

In other examples, "role2" might be a role that has a tuple {"access":"read_create_modify","path":"/api/storage/volumes"}, which means that a user account with "role2" can perform GET, POST and PATCH (but not DELETE) requests on the *api/storage/volumes* API or derived APIs that have *api/storage/volumes* as the prefix.

"role3" might be a role that has a tuple {"access":"read_create","path":"vserver nfs"}, which means that a user account with "role3" can perform "show" and "create" operations on *vserver nfs* command or derived commands that have *vserver nfs* as the prefix. There is no query associated with "role3".

"role4" might be a role that has a tuple {"access":"all","path":"snapmirror policy","query":"-policy !CustomPol*"}, which means that a user account with "role4" can perform "show", "create","modify" and "delete" operations on *snapmirror policy* command or derived commands that have *snapmirror policy* as the prefix. However, a user is not authorized to perform the above set of operations on SnapMirror policies starting with the name "CustomPol".

In cases where a role has tuples with multiple APIs having the same prefix or multiple commands/command directories having the same prefix, the highest match wins out. For example, if "role5" has the following tuples: {"access":"readonly","path":"/api/cluster"} and {"access":"all","path":"/api/cluster/schedules"}, then only a GET request is allowed on APIs with *api/cluster* as the prefix; while GET, POST, PATCH and DELETE requests are possible on the *api/cluster/schedules* API. Similarly, if "role6" has the following tuples: {"access":"readonly","path":"volume"} and {"access":"read_create_delete","path":"volume snapshot"}, then only a "show" operation is allowed on commands/command directories with *volume* but not *volume snapshot* as the prefix; while "show", "create" and "delete" operations are possible on the *volume snapshot* command directory or any other command/command directory under *volume snapshot*.

Predefined (built-in) roles

Related REST APIs and related commands/command directories are used to form predefined cluster-scoped and SVM-scoped roles, such as: "admin", "backup", "readonly" for cluster and "vsadmin", "vsadmin-backup", "vsadmin-protocol" for SVMs.
These can be retrieved by calling a GET request on */api/security/roles* API and can be assigned to user accounts. See the examples for *api/security/accounts*.

A GET request on */api/security/roles/{owner.uuid}/{name}* or */api/security/roles/{owner.uuid}/{name}/privileges*, where "name" refers to a predefined (built-in) role, returns privilege tuples containing REST API paths along with privilege tuples containing command/command directory paths.

These predefined roles cannot be modified or deleted.

Mapped roles

Before REST APIs, the RBAC roles (legacy roles) were defined to contain the CLI commands and their access levels. Now, almost all REST APIs map to one or more CLI commands. When a role is created using a POST request on /api/security/roles, a mapped legacy role is created. This legacy role has the same access level (as that of the REST API) for the mapped CLI commands. However, if a legacy role with the same name already exists, the POST operation fails and you need to choose a unique name for the role. Legacy roles are also managed using the REST endpoint /api/security/roles and its derivatives. In CLI, legacy roles are managed using the "security login role <create \| modify \| delete> -role <rolename>" commands.</rolename>

Note that the mapped legacy role (for the REST API role created) cannot be manipulated using either REST API or the CLI.

The reverse case is not true; the creation of a legacy role will not create a mapped role with equivalent REST APIs.

API restrictions

A role can be a REST role or a legacy role but not both. A role cannot be defined to have a mix of privilege tuples with REST API paths and privilege tuples with command/command directory paths. However, predefined (built-in) roles are an exception to this rule.
Numerous APIs are scoped for the cluster level only. This results in an access error if assigned to an SVM-scoped role. For example, *api/cluster/nodes* does not work when added as a tuple entry for an SVM-scoped role.

A number of APIs allowed for an SVM-scoped role might have restrictions on the access level. For example, */api/network/ethernet/ports* cannot have an access level of "all" for an SVM-scoped role; this results in an access error when a POST or PATCH request is made.

Roles created with a REST API path prefix which is common to many APIs might have restrictions based on the scope of the role; cluster or SVM.
For example, {"access":"all","path":"/api/security"} might be a tuple entry for an SVM role. Any GET, POST, PATCH, or DELETE operation fails on API */api/security/accounts* while the same on */api/security/login/messages* succeeds. However, a role with exactly the same tuple when created at the cluster-scope level allows the operations.

Numerous APIs have restrictions on the objects that can be operated on based on the context of the SVM or cluster. For example, a POST request on */api/security/authentication/password* API changes the password for a user account. If executed in the context of an SVM (POST request on an SVM interface), only the password of the user executing the POST can be modified, and attempts to modify the password of any other user results in an access error. However, if a POST request is performed by a cluster administrator account, the password for any user account (cluster or SVM) can be modified.

Resource-qualified endpoints are now supported. At present, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Examples

Creating a cluster-scoped custom role of REST API tuples

Specify the role name and the tuples (of REST APIs and their access levels) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped role.

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d
'{"name":"cluster_role1", "privileges" :
[{"access":"readonly","path":"/api/cluster/jobs"},{"access":"all","path":"
/api/application/applications"},{"access":"readonly","path":"/api/applicat
ion/templates"}]}'
```

Creating a cluster-scoped custom role of command and/or command directory tuples

Specify the role name and the tuples (of commands/command directories, their access levels and associated optional queries) in the body of the POST request. The owner.uuid or owner.name are not required to be specified for a cluster-scoped role.

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d
'{"name":"cluster_role2", "privileges" :
[{"access":"readonly","path":"volume
qtree","query":""},{"access":"all","path":"security
certificate"},{"access":"readonly","path":"snapmirror policy","query":"-
policy !CustomPol*"}]}'
```

Creating an SVM-scoped custom role of REST API tuples

For an SVM-scoped role, specify either owner.name or owner.uuid in the request body along with other parameters for the role. These correspond to the name or UUID of the SVM for which the role is being created and can be obtained from the response body of the GET request performed on the */api/svm/svms* API.

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d '{"owner": {"uuid"
: "9f93e553-4b02-11e9-a3f9-005056bb7acd"},"name":"svm_role1", "privileges"
:
[{"access":"readonly","path":"/api/cluster/jobs"},{"access":"all","path":"
/api/application/applications"},{"access":"readonly","path":"/api/applicat
ion/templates"}]}'
```

Creating an SVM-scoped custom role of command and/or command directory tuples

For an SVM-scoped role, specify either owner.name or owner.uuid in the request body along with other parameters for the role. These correspond to the name or UUID of the SVM for which the role is being created and can be obtained from the response body of the GET request performed on the */api/svm/svms* API.

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d '{"owner": {"uuid"
: "9f93e553-4b02-11e9-a3f9-005056bb7acd"},"name":"svm_role2", "privileges"
: [{"access":"readonly","path":"job schedule interval","query":"-days
>1"},{"access":"all","path":"application
snapshot"},{"access":"none","path":"volume move"}]}'
```

Creating a custom role with a resource-qualified endpoint

Specify the role name and the tuples (of REST APIs and their access levels) in the body of the POST request. One or more of the tuples can now contain a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the *Snapshots* and *File System Analytics* endpoints listed above in the *Overview* section.

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d
'{"name":"cluster_role", "privileges" :
[{"access":"readonly","path":"/api/cluster/jobs"},{"access":"all","path":"
/api/storage/volumes/4ae77149-7752-11eb-8d4e-
0050568ed6bd/snapshots"},{"access":"all","path":"/api/storage/volumes/6519
986e-7752-11eb-8d4e-
0050568ed6bd/snapshots"},{"access":"readonly","path":"/api/storage/volumes
/8823c869-9ea1-11ec-8771-005056bb1a7c/top-
metrics/users"},{"access":"readonly","path":"/api/application/templates"}]
}'
```

Creating a custom role with a private CLI endpoint

```
# The API:
POST "/api/security/roles"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles" -d
'{"name":"cluster_role3", "privileges" :
[{"access":"readonly","path":"/api/private/cli/cluster"}]}'
```

Retrieving the configured roles

All of the roles or a filtered list of roles (for example by name, predefined, and so on) can be retrieved.

```
# The API:
GET "/api/security/roles?fields=%2A"

# The call to retrieve all the roles configured in the cluster:
curl -X GET "https://<mgmt-ip>/api/security/roles"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "admin",
    "privileges": [
      {
        "path": "/api",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/admin/privileges/%2Fapi"
          }
        }
      },
      {
        "path": "DEFAULT",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/admin/privileges/DEFAULT"
          }
        }
      }
    ],
```

```
    "builtin": true,
    "scope": "cluster",
    "_links": {
      "self": {
        "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/admin"
      }
    }
  },
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "customRole_rest",
    "privileges": [
      {
        "path": "/api/storage/volumes/738e3c9f-9897-41f2-be92-
a00945fd9bdb/snapshots",
        "access": "readonly",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_rest/privileges/%2Fapi%2Fstorage%2Fvolumes%2F738e3
c9f-9897-41f2-be92-a00945fd9bdb%2Fsnapshots"
          }
        }
      },
      {
        "path": "/api/storage/volumes/e621583b-f445-4713-ba9e-
a052d53c8a83/snapshots",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_rest/privileges/%2Fapi%2Fstorage%2Fvolumes%2Fe6215
83b-f445-4713-ba9e-a052d53c8a83%2Fsnapshots"
          }
        }
      }
      {
```

```
        "path": "/api/svm/svms/881764b5-9ea1-11ec-8771-005056bb1a7c/top-
metrics/directories",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/881764b5-9ea1-11ec-8771-
005056bb1a7c/customRole_rest/privileges/%2Fapi%2Fstorage%2Fsvm%2F881764b5-
9ea1-11ec-8771-005056bb1a7c%2Ftop-metrics%2Fdirectories"
          }
        }
      }
    ],
    "builtin": false,
    "scope": "cluster",
    "_links": {
      "self": {
        "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_rest"
      }
    }
  },
  {
    "owner": {
      "uuid": "2903de6f-4bd2-11e9-b238-0050568e2e25",
      "name": "cluster1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2903de6f-4bd2-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "customRole_legacy",
    "privileges": [
      {
        "path": "volume",
        "access": "readonly",
        "query":"-is_svm_root false",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_legacy/privileges/volume"
          }
        }
      },
      {
        "path": "volume snapshot",
```

```
        "access": "all",
        "query": "-volume vol1&#124;vol2",
        "_links": {
          "self": {
            "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_legacy/privileges/volume%20snapshot"
          }
        }
      }
    ],
    "builtin": false,
    "scope": "cluster",
    "_links": {
      "self": {
        "href": "/api/security/roles/2903de6f-4bd2-11e9-b238-
0050568e2e25/customRole_legacy"
      }
    }
  },
  {
    "owner": {
      "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
        }
      }
    },
    "name": "vsadmin",
    "privileges": [
      {
        "path": "/api/application/applications",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/%2Fapi%2Fapplication%2Fapplications"
          }
        }
      },
      {
        "path": "/api/application/templates",
        "access": "readonly",
        "_links": {
          "self": {
```

```
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/%2Fapi%2Fapplication%2Ftemplates"
          }
        }
      },
      {
        "path": "/api/cluster",
        "access": "readonly",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/%2Fapi%2Fcluster"
          }
        }
      },
      {
        "path": "/api/cluster/jobs",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/%2Fapi%2Fcluster%2Fjobs"
          }
        }
      },
      {
        "path": "/api/cluster/schedules",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/%2Fapi%2Fcluster%2Fschedules"
          }
        }
      },
      {
        "path": "DEFAULT",
        "access": "none",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/DEFAULT"
          }
        }
      },
      {
```

```
        "path": "application create",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/application%20create"
          }
        }
      },
      {
        "path": "application delete",
        "access": "all",
        "_links": {
          "self": {
            "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin/privileges/application%20delete"
          }
        }
      },
    ],
    "builtin": true,
    "scope": "svm",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/vsadmin"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/security/roles?fields=%2A"
  }
}
}
```


Using a scoped call to retrieve the configured roles

```
# Scoped call to retrieve all the roles for a particular SVM using
owner.uuid:
curl -X GET "https://<mgmt-ip>/api/security/roles/?owner.uuid=aaef7c38-
4bd3-11e9-b238-0050568e2e25"

# Scoped call to retrieve all the roles for a particular SVM using
owner.name:
curl -X GET "https://<mgmt-ip>/api/security/roles/?owner.name=svm1"

# Scoped call to retrieve the roles having vsadmin as the prefix in the
role name:
curl -X GET "https://<mgmt-ip>/api/security/roles/?name=vsadmin*"

# Scoped call to retrieve the predefined roles:
curl -X GET "https://<mgmt-ip>/api/security/roles/?builtin=true"

# Scoped call to retrieve the custom roles:
curl -X GET "https://<mgmt-ip>/api/security/roles/?builtin=false"
```

Retrieve a list of roles configured in the cluster

GET `/security/roles`

Introduced In: 9.6

Retrieves a list of roles configured in the cluster.

Related ONTAP commands

- `security login rest-role show`
- `security login role show`

Learn more

- DOC /security/roles

Parameters

Name	Type	In	Required	Description
builtin	boolean	query	False	Filter by builtin • Introduced in: 9.7

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope • Introduced in: 9.7
privileges.path	string	query	False	Filter by privileges.path • Introduced in: 9.7
privileges.query	string	query	False	Filter by privileges.query • Introduced in: 9.11
privileges.access	string	query	False	Filter by privileges.access • Introduced in: 9.7
owner.name	string	query	False	Filter by owner.name • Introduced in: 9.7
owner.uuid	string	query	False	Filter by owner.uuid • Introduced in: 9.7
name	string	query	False	Filter by name • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[role]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "admin",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "privileges": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "access": "all",
          "path": "volume move start",
          "query": "-vserver vs1|vs2|vs3 -destination-aggregate
aggr1|aggr2"
        }
      ],
      "scope": "string"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

Owner name and UUID that uniquely identifies the role.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*

- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*
- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
_links	_links	
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.

Name	Type	Description
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

role

A named set of privileges that defines the rights an account has when it is assigned the role.

Name	Type	Description
_links	_links	
builtin	boolean	Indicates if this is a built-in (pre-defined) role which cannot be modified or deleted.
name	string	Role name
owner	owner	Owner name and UUID that uniquely identifies the role.
privileges	array[role_privilege]	The list of privileges that this role has been granted.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new cluster-scoped or SVM-scoped role

POST `/security/roles`

Introduced In: 9.6

Creates a new cluster-scoped role or an SVM-scoped role. For an SVM-scoped role, specify either the SVM name as the owner.name or SVM UUID as the owner.uuid in the request body along with other parameters for the role. The owner.uuid or owner.name are not required to be specified for a cluster-scoped role.

Required parameters

- `name` - Name of the role to be created.
- `privileges` - Array of privilege tuples. Each tuple consists of a REST API or command/command directory path and its desired access level. If the tuple refers to a command/command directory path, it could optionally contain a query.

Optional parameters

- `owner.name` or `owner.uuid` - Name or UUID of the SVM for an SVM-scoped role.

Related ONTAP commands

- `security login rest-role create`
- `security login role create`

Learn more

- DOC /security/roles

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
builtin	boolean	Indicates if this is a built-in (pre-defined) role which cannot be modified or deleted.
name	string	Role name
owner	owner	Owner name and UUID that uniquely identifies the role.
privileges	array[role_privilege]	The list of privileges that this role has been granted.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example request

```
{
  "name": "admin",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "privileges": [
    {
      "access": "all",
      "path": "volume move start",
      "query": "-vserver vs1|vs2|vs3 -destination-aggregate
aggr1|aggr2"
    }
  ],
  "scope": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1263347	Cannot modify pre-defined roles
2621462	The supplied SVM does not exist.
5636129	Role with given name has not been defined.
5636143	Vserver admin cannot use the API with this access level.

Error Code	Description
5636144	Invalid value specified for access level.
5636168	This role is mapped to a rest-role and cannot be modified directly. Modifications must be done with rest-role.
5636169	Invalid character in URI.
5636170	URI does not exist.
5636171	Role already exists in legacy role table.
5636184	Expanded REST roles for granular resource control feature is currently disabled.
5636185	The specified UUID was not found.
5636186	Expanded REST roles for granular resource control requires an effective cluster version of 9.10.1 or later.
5636191	The "path" parameter in a "privileges" tuple can contain only API endpoint entries or only command and command directory entries.
5636192	The query parameter cannot be specified for the privileges tuple with API endpoint entries.
5636200	The specified value of the access parameter is invalid, if a command or command directory is specified in the path parameter.
5636210	User creation failed because LDAP is not configured for the SVM or the LDAP connection is not secure.
5636256	Cannot create a role with the specified role name because it is reserved by the system.
13434890	Vserver-ID failed for Vserver roles.
13434891	UUID lookup failed for Vserver roles.
13434892	Roles is a required field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

Owner name and UUID that uniquely identifies the role.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*
- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

role

A named set of privileges that defines the rights an account has when it is assigned the role.

Name	Type	Description
builtin	boolean	Indicates if this is a built-in (pre-defined) role which cannot be modified or deleted.
name	string	Role name

Name	Type	Description
owner	owner	Owner name and UUID that uniquely identifies the role.
privileges	array[role_privilege]	The list of privileges that this role has been granted.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View or delete a role

Security roles owner.uuid name endpoint overview

Overview

This API is used to retrieve or delete a role. The role can be SVM-scoped or cluster-scoped.

Specify the owner UUID and the role name in the URI path. The owner UUID corresponds to the UUID of the SVM for which the role has been created and can be obtained from the response body of a GET call performed on one of the following APIs:
 /api/security/roles for all roles
 /api/security/roles/?scope=svm for SVM-scoped roles
 /api/security/roles/?owner.name=<svm-name></i> for roles in a specific SVM This API response contains the complete URI for each role that can be used for retrieving or deleting a role.</svm-name>

The pre-defined roles can be retrieved but cannot be deleted.

Examples

Retrieving the role configuration for a REST role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/secure_role"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
    }
  }
},
"name": "secure_role",
"privileges": [
  {
    "path": "/api/security",
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/secure_role/privileges/%2Fapi%2Fsecurity"
      }
    }
  },
  {
    "path": "/api/storage/volumes/651f7fdf-7752-11eb-8d4e-
0050568ed6bd/snapshots",
    "access": "readonly",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/secure_role/privileges/%2Fapi%2Fstorage%2Fvolumes%2F651f7fdf-
7752-11eb-8d4e-0050568ed6bd%2Fsnapshots"
      }
```

```
    }
  },
  {
    "path": "/api/storage/volumes/6dfeb406-9a16-11ec-819e-
005056bb1a7c/top-metrics/clients",
    "access": "readonly",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/secure_role/privileges/%2Fapi%2Fstorage%2Fvolumes%2F6dfeb406-
9a16-11ec-819e-005056bb1a7c%2Ftop-metrics%2Fclients"
      }
    }
  }
],
"builtin": false,
"scope": "svm",
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/secure_role"
  }
}
}
```

Retrieving the role configuration for a custom legacy role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/finVolNoDel"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/aaef7c38-4bd3-11e9-b238-0050568e2e25"
    }
  }
},
```

```
"name": "finVolNoDel",
"privileges": [
  {
    "path": "DEFAULT",
    "access": "none",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/finVolNoDel/privileges/DEFAULT"
      }
    }
  },
  {
    "path": "volume",
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/finVolNoDel/privileges/volume"
      }
    }
  },
  {
    "path": "volume delete",
    "access": "none",
    "query": "-volume vol_fin*",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/finVolNoDel/privileges/volume%20delete"
      }
    }
  }
],
"builtin": false,
"scope": "svm",
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/finVolNoDel"
  }
}
}
```

Deleting a custom role

```
# The API:
DELETE "/api/security/roles/{owner.uuid}/{name}"

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1"
```

Delete a role

DELETE `/security/roles/{owner.uuid}/{name}`

Introduced In: 9.6

Deletes the specified role.

Required parameters

- `name` - Name of the role to be deleted.
- `owner.uuid` - UUID of the SVM housing the role.

Related ONTAP commands

- `security login rest-role delete`
- `security login role delete`

Learn more

- DOC /security/roles/{owner.uuid}/{name}
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name to be deleted.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1263347	Cannot modify pre-defined roles.
5636169	Specified URI path is invalid or not supported. Resource-qualified endpoints are not supported.
5636170	URI does not exist.
5636172	User accounts detected with this role assigned. Update or delete those accounts before deleting this role.
5636173	Features require an effective cluster version of 9.6 or later.
5636184	Expanded REST roles for granular resource control feature is currently disabled.
5636185	The specified UUID was not found.
5636186	Expanded REST roles for granular resource control requires an effective cluster version of 9.10.1 or later.
5636245	Failed to delete the role because it is part of the group role-mapping configuration.
5636246	Failed to delete the rest role because it is part of the group role-mapping configuration.
5636247	Failed to delete the rest role because it is part of the external-role-mapping configuration.
5636249	Failed to delete the role because it is part of the external-role-mapping configuration.
13434890	Vserver-ID failed for Vserver roles.
13434893	The SVM does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the details of a role

GET `/security/roles/{owner.uuid}/{name}`

Introduced In: 9.6

Retrieves the details of the specified role.

Related ONTAP commands

- `security login rest-role show`
- `security login role show`

Learn more

- DOC /security/roles/{owner.uuid}/{name}
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
builtin	boolean	Indicates if this is a built-in (pre-defined) role which cannot be modified or deleted.
name	string	Role name
owner	owner	Owner name and UUID that uniquely identifies the role.
privileges	array[role_privilege]	The list of privileges that this role has been granted.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "admin",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "privileges": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access": "all",
      "path": "volume move start",
      "query": "-vserver vs1|vs2|vs3 -destination-aggregate
aggr1|aggr2"
    }
  ],
  "scope": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

Owner name and UUID that uniquely identifies the role.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*

- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
_links	_links	
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage role privilege details

Security roles owner.uuid name privileges endpoint overview

Overview

This API is used to configure the role privileges (tuples of REST URI paths or command/command directory paths, their access levels and optional queries, where the tuples refer to command/command directory paths). It also retrieves all of the privilege tuples for a role and can add a tuple to an existing role or creates a new role with the provided tuple. The "path" attribute can be a resource-qualified endpoint. Currently, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

The role can be SVM-scoped or cluster-scoped.

Specify the owner UUID and the role name in the URI path. The owner UUID corresponds to the UUID of the SVM for which the role has been created and can be obtained from the response body of a GET request performed on one of the following APIs:

- */api/security/roles* for all the roles
- */api/security/roles/?scope=svm* for SVM-scoped roles
- /api/security/roles/?owner.name=<svm-name></i> for roles in a specific SVM This API response contains the complete URI for each role and can be used after suffixing it with _"privileges".</svm-name>_

The pre-defined roles can be retrieved but cannot be updated.

Examples

Adding a privilege tuple for a REST URI/endpoint to an existing custom role

```
# The API:
POST "/security/roles/{owner.uuid}/{name}/privileges"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges" -d
'{"access":"readonly","path":"/api/protocols"}'
```

Adding a privilege tuple for a command or command directory to an existing custom role

```
# The API:
POST "/security/roles/{owner.uuid}/{name}/privileges"

# The call:
curl -X POST "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges" -d
'{"access":"all","path":"statistics volume show","query":"-vserver
vs1&#124;vs2 -aggregate aggr1&#124;aggr2"}'
```

Retrieving all the privilege tuples for a REST role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}/privileges"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges"

# The response:
{
"records": [
  {
    "path": "/api/application",
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fapplication"
      }
    }
  },
  {
    "path": "/api/protocols",
    "access": "readonly",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fprotocols"
      }
    }
  },
  {
    "path": "/api/storage/volumes/1385d680-74fc-4adb-a348-
9a740e83702a/snapshots",
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fvolumes%2F1385d680-
74fc-4adb-a348-9a740e83702a%2Fsnapshots"
      }
    }
  },
  {
    "path": "/api/storage/volumes/*/top-metrics/users",
```

```
    "access": "read_create_modify",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fvolumes%2F%2A%2Ftop-
metrics%2Fusers"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges"
  }
}
}
```

Retrieving all the privilege tuples for a custom legacy role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}/privileges"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges"

# The response:
{
"records": [
  {
    "path": "network interface",
    "access": "readonly",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/network%20interface"
      }
    }
  },
  {
    "path": "security",
    "access": "readonly",
    "_links": {
```

```
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/security"
      }
    }
  },
  {
    "path": "security certificate"
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/security%20certificate"
      }
    }
  },
  {
    "path": "security password"
    "access": "all",
    "_links": {
      "self": {
        "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/security%20password"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges"
  }
}
}
```


Retrieve privilege details of the specified role

GET `/security/roles/{owner.uuid}/{name}/privileges`

Introduced In: 9.6

Retrieves privilege details of the specified role.

Related ONTAP commands

- `security login rest-role show`

- `security login role show`

Learn more

- DOC /security/roles/{owner.uuid}/{name}/privileges
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[role_privilege]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access": "all",
      "path": "volume move start",
      "query": "-vserver vs1|vs2|vs3 -destination-aggregate
aggr1|aggr2"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*
- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
_links	_links	
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a privilege tuple to an existing role

POST `/security/roles/{owner.uuid}/{name}/privileges`

Introduced In: 9.6

Adds a privilege tuple (of REST URI or command/command directory path, its access level and an optional query, if the "path" refers to a command/command directory path) to an existing role or creates a new role with the provided tuple.

Required parameters

- `owner.uuid` - UUID of the SVM that houses this role.
- `name` - Name of the role to be updated.
- `path` - REST URI path (example: */api/storage/volumes*) or command/command directory path (example: *snaplock compliance-clock*). Can be a resource-qualified endpoint (example: */api/storage/volumes/43256a71-be02-474d-a2a9-9642e12a6a2c/snapshots*). Currently, resource-qualified endpoints are limited to the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

- `access` - Desired access level for the REST URI path or command/command directory.

Related ONTAP commands

- `security login rest-role create`
- `security login role create`

Learn more

- DOC /security/roles/{owner.uuid}/{name}/privileges
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.

Name	Type	Description
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

Example request

```
{
  "access": "all",
  "path": "volume move start",
  "query": "-vserver vs1|vs2|vs3 -destination-aggregate aggr1|aggr2"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1263347	Cannot modify pre-defined roles.
5636129	A role with given name has not been defined.
5636143	A Vserver admin cannot use the API with this access level.
5636144	The value specified for the access level is not valid.
5636168	This role is mapped to a rest-role and cannot be modified directly. Modifications must be done with rest-role.
5636169	A character in the URI is not valid.
5636170	The URI does not exist.
5636173	This feature requires an effective cluster version of 9.6 or later.
5636175	Vserver admin cannot have access to given API.
5636184	The expanded REST roles for granular resource control feature is currently disabled.
5636185	The specified UUID was not found.
5636186	Expanded REST roles for granular resource control requires an effective cluster version of 9.10.1 or later.
5636192	The query parameter cannot be specified for the privileges tuple with API endpoint entries.
5636200	The specified value of the access parameter is invalid, if a command or command directory is specified in the path parameter.
5636256	Cannot create a role with the specified role name because it is reserved by the system.
13434890	Vserver-ID failed for Vserver roles.
13434891	UUID LookUp failed for Vserver roles.
13434892	Roles is a required field.
13434893	The SVM does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*
- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage role privilege path

Security roles owner.uuid name privileges path endpoint overview

Overview

A role can comprise of multiple tuples and each tuple consists of a REST API path or command/command directory path and its access level. If the tuple refers to a command/command directory path, it may optionally be associated with a query. These APIs can be used to retrieve or modify the associated access level and optional query. They can also be used to delete one of the constituent REST API paths or command/command directory paths within a role. The REST API path can be a resource-qualified endpoint. Currently, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

The role can be SVM-scoped or cluster-scoped.

Specify the owner UUID and the role name in the URI path. The owner UUID corresponds to the UUID of the SVM for which the role has been created and can be obtained from the response body of a GET request performed on one of the following APIs:
 /api/security/roles for all roles
 /api/security/roles/?scope=svm for SVM-scoped roles
 /api/security/roles/?owner.name=<svm-name></i> for roles in a specific SVM This API response contains the complete URI for each tuple of the role and can be used for GET, PATCH, or DELETE operations.</svm-name>

The access level for paths in pre-defined roles cannot be updated.

Examples

Updating the access level for a REST API path in the privilege tuple of an existing role

```
# The API:
PATCH "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges/%2Fapi%2Fprotocols" -d
'{"access":"all"}'
```

Updating the access level for a command/command directory path in the privilege tuple of an existing role

```
# The API:
PATCH "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges/netp%20port" -d
'{"access":"readonly","query":"-type if-group&#124;vlan"}'
```

Updating the access level for a resource-qualified endpoint in the privilege tuple of an existing role

```
# The API:
PATCH "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fvolumes%2F742ef001-
24f0-4d5a-9ec1-2fdaadb282f4%2Ffiles" -d '{"access":"readonly"}'
```

Retrieving the access level for a REST API path in the privilege tuple of an existing role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fprotocols"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25"
},
"name": "svm_role1",
"path": "/api/protocols",
"access": "all",
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fprotocols"
  }
}
}
```

Retrieving the access level for a command/command directory path in the privilege tuple of an existing role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/net%20port"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25"
},
"name": "svm_role1",
"path": "net port",
"query":"-type if-group&#124;vlan",
"access": "readonly",
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/net%20port"
  }
}
}
```

Retrieving the access level for a resource-qualified endpoint in the privilege tuple of an existing role

```
# The API:
GET "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fvolumes%2Fd0f3b91a-
4ce7-4de4-afb9-7eda668659dd%2F%2Fsnapshots"

# The response:
{
"owner": {
  "uuid": "aaef7c38-4bd3-11e9-b238-0050568e2e25"
},
"name": "svm_role1",
"path": "/api/storage/volumes/d0f3b91a-4ce7-4de4-afb9-
7eda668659dd/snapshots",
"access": "all",
"_links": {
  "self": {
    "href": "/api/security/roles/aaef7c38-4bd3-11e9-b238-
0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fvolumes%2Fd0f3b91a-
4ce7-4de4-afb9-7eda668659dd%2Fsnapshots"
  }
}
}
```

Deleting a privilege tuple, containing a REST API path, from an existing role

```
# The API:
DELETE "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges/%2Fapi%2Fprotocols"
```

Deleting a privilege tuple, containing a command/command directory path, from an existing role

```
# The API:
DELETE "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
curl -X DELETE "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges/net%20port"
```

Deleting a privilege tuple, containing a resource-qualified endpoint, from an existing role

```
# The API:
DELETE "/api/security/roles/{owner.uuid}/{name}/privileges/{path}"

# The call:
/api/svm/svms/{svm.uuid}/top-metrics/files
curl -X DELETE "https://<mgmt-ip>/api/security/roles/aaef7c38-4bd3-11e9-
b238-0050568e2e25/svm_role1/privileges/%2Fapi%2Fstorage%2Fsvm%2F6e000659-
9a16-11ec-819e-005056bb1a7c%2Ftop-metrics%2Ffiles"
```

Delete a privilege tuple from the role

DELETE `/security/roles/{owner.uuid}/{name}/privileges/{path}`

Introduced In: 9.6

Deletes a privilege tuple (of REST URI or command/command directory path, its access level and an optional query) from the role. The REST URI can be a resource-qualified endpoint. Currently, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic

privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Required parameters

- `owner.uuid` - UUID of the SVM which houses this role.
- `name` - Name of the role to be updated.
- `path` - Constituent REST API path or command/command directory path to be deleted from this role. Can be a resource-qualified endpoint (example: */api/svm/svms/43256a71-be02-474d-a2a9-9642e12a6a2c/top-metrics/users*). Currently, resource-qualified endpoints are limited to the *Snapshots* and *File System Analytics* endpoints listed above in the description.

Related ONTAP commands

- `security login rest-role delete`
- `security login role delete`

Learn more

- DOC /security/roles/{owner.uuid}/{name}/privileges/{path}
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
path	string	path	True	REST API path or command/command directory path

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1263347	Cannot modify pre-defined roles.

Error Code	Description
5636168	This role is mapped to a rest-role and cannot be modified directly. Modifications must be done with rest-role.
5636169	Specified URI path is invalid or not supported. Resource-qualified endpoints are not supported.
5636170	URI does not exist.
5636172	User accounts detected with this role assigned. Update or delete those accounts before deleting this role.
5636173	This feature requires an effective cluster version of 9.6 or later.
5636184	Expanded REST roles for granular resource control feature is currently disabled.
5636185	The specified UUID was not found.
5636186	Expanded REST roles for granular resource control requires an effective cluster version of 9.10.1 or later.
13434890	Vserver-ID failed for Vserver roles.
13434893	The SVM does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the access level for a REST API path or command/command directory path for a role

GET `/security/roles/{owner.uuid}/{name}/privileges/{path}`

Introduced In: 9.6

Retrieves the access level for a REST API path or command/command directory path for the specified role. Optionally retrieves the query, if 'path' refers to a command/command directory path. The REST API path can be a resource-qualified endpoint. Currently, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Related ONTAP commands

- `security login rest-role show`
- `security login role show`

Learn more

- DOC /security/roles/{owner.uuid}/{name}/privileges/{path}
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
path	string	path	True	REST API path or command/command directory path
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
path	string	Either of REST URI/endpoint OR command/command directory path.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access": "all",
  "path": "volume move start",
  "query": "-vserver vs1|vs2|vs3 -destination-aggregate aggr1|aggr2"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the access level for a REST API path or command/command directory path

PATCH `/security/roles/{owner.uuid}/{name}/privileges/{path}`

Introduced In: 9.6

Updates the access level for a REST API path or command/command directory path. Optionally updates the query, if 'path' refers to a command/command directory path. The REST API path can be a resource-qualified endpoint. Currently, the only supported resource-qualified endpoints are the following:

Snapshots APIs

– /api/storage/volumes/{volume.uuid}/snapshots

File System Analytics APIs

– /api/storage/volumes/{volume.uuid}/files

– /api/storage/volumes/{volume.uuid}/top-metrics/clients

– /api/storage/volumes/{volume.uuid}/top-metrics/directories

– /api/storage/volumes/{volume.uuid}/top-metrics/files

– /api/storage/volumes/{volume.uuid}/top-metrics/users

– /api/svm/svms/{svm.uuid}/top-metrics/clients

– /api/svm/svms/{svm.uuid}/top-metrics/directories

– /api/svm/svms/{svm.uuid}/top-metrics/files

– /api/svm/svms/{svm.uuid}/top-metrics/users

Ontap S3 APIs

– /api/protocols/s3/services/{svm.uuid}/users

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Required parameters

- `owner.uuid` - UUID of the SVM that houses this role.
- `name` - Name of the role to be updated.
- `path` - Constituent REST API path or command/command directory path, whose access level and/or query are/is to be updated. Can be a resource-qualified endpoint (example: */api/storage/volumes/43256a71-be02-474d-a2a9-9642e12a6a2c/snapshots*). Currently, resource-qualified endpoints are limited to the *Snapshots* and *File System Analytics* endpoints listed above in the description.

Optional parameters

- `access` - Access level for the path.
- `query` - Optional query, if the path refers to a command/command directory path.

Related ONTAP commands

- `security login rest-role modify`
- `security login role modify`

Learn more

- DOC /security/roles/{owner.uuid}/{name}/privileges/{path}
- DOC /security/roles

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Role owner UUID
name	string	path	True	Role name
path	string	path	True	REST API path or command/command directory path

Request Body

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

Example request

```
{
  "access": "all",
  "query": "-vserver vs1|vs2|vs3 -destination-aggregate aggr1|aggr2"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5636168	This role is mapped to a rest-role and cannot be modified directly. Modifications must be done with rest-role.
5636192	The query parameter cannot be specified for the privileges tuple with API endpoint entries.
5636200	The specified value of the access parameter is invalid, if a command or command directory is specified in the path parameter.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

role_privilege

A tuple containing a REST endpoint or a command/command directory path and the access level assigned to that endpoint or command/command directory. If the "path" attribute refers to a command/command directory path, the tuple could additionally contain an optional query. The REST endpoint can be a resource-qualified endpoint. At present, the only supported resource-qualified endpoints are the following

Snapshots APIs

- */api/storage/volumes/{volume.uuid}/snapshots*

File System Analytics APIs

- */api/storage/volumes/{volume.uuid}/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/clients*
- */api/storage/volumes/{volume.uuid}/top-metrics/directories*
- */api/storage/volumes/{volume.uuid}/top-metrics/files*
- */api/storage/volumes/{volume.uuid}/top-metrics/users*
- */api/svm/svms/{svm.uuid}/top-metrics/clients*
- */api/svm/svms/{svm.uuid}/top-metrics/directories*
- */api/svm/svms/{svm.uuid}/top-metrics/files*
- */api/svm/svms/{svm.uuid}/top-metrics/users*
- */api/protocols/s3/services/{svm.uuid}/users*

In the above APIs, wildcard character * could be used in place of *{volume.uuid}* or *{svm.uuid}* to denote *all* volumes or *all* SVMs, depending upon whether the REST endpoint references volumes or SVMs. The *{volume.uuid}* refers to the *-instance-uuid* field value in the "volume show" command output at diagnostic privilege level. It can also be fetched through REST endpoint */api/storage/volumes*.

Name	Type	Description
access	string	Access level for the REST endpoint or command/command directory path. If it denotes the access level for a command/command directory path, the only supported enum values are 'none','readonly' and 'all'.
query	string	Optional attribute that can be specified only if the "path" attribute refers to a command/command directory path. The privilege tuple implicitly defines a set of objects the role can or cannot access at the specified access level. The query further reduces this set of objects to a subset of objects that the role is allowed to access. The query attribute must be applicable to the command/command directory specified by the "path" attribute. It is defined using one or more parameters of the command/command directory path specified by the "path" attribute.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage SSH server

Security SSH endpoint overview

Overview

ONTAP supports SSH server that can be accessed from any standard SSH client. A user account needs to be associated with SSH as the application (refer the documentation for *api/security/accounts* DOC /security/accounts . Upon connecting from a client, the user is authenticated and a command line shell is presented.

This endpoint is used to retrieve or modify the SSH configuration at the cluster level. The configuration consists of SSH security parameters (security algorithms, maximum authentication retry attempts allowed before closing the connection, and *ssh-rsa* enabled status for public key algorithms) and SSH connection limits.

The security algorithms include SSH key exchange algorithms, ciphers for payload encryption, MAC algorithms and host key algorithms. This configuration is the default for all newly created SVMs; existing SVM configurations are not impacted.
The SSH connection limits include maximum connections per second, maximum simultaneous sessions from the same client host, and overall maximum SSH connections at any given point in time. The connection limits are per node and will be the same for all nodes in the cluster.

Examples

Updating the SSH security parameters

Specify the algorithms in the body of the PATCH request.

```
# The API:
PATCH "/api/security/ssh"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/ssh" -d '{ "ciphers": [
"aes256_ctr", "aes192_ctr" ], "key_exchange_algorithms": [
"diffie_hellman_group_exchange_sha256", "ecdh_sha2_nistp256",
"diffie_hellman_group18_sha512" ], "mac_algorithms": [
"hmac_sha2_512_etm", "umac_128_etm" ], "host_key_algorithms": [
"ecdsa_sha2_nistp256", "ssh_rsa" ], "max_authentication_retry_count": 3,
"is_rsa_in_publickey_algorithms_enabled": true  }'
```

Updating the SSH connection limits

Specify the connection limits in the body of the PATCH request.

```
# The API:
PATCH "/api/security/ssh"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/ssh" -d '{
"connections_per_second": 8, "max_instances": 10, "per_source_limit": 5 }'
```

Retrieving the cluster SSH server configuration

```
# The API:
GET "/api/security/ssh"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/ssh"

# The response:
{
"ciphers": [
  "aes256_ctr",
  "aes192_ctr"
],
"key_exchange_algorithms": [
  "diffie_hellman_group_exchange_sha256",
  "ecdh_sha2_nistp256",
  "diffie_hellman_group18_sha512"
],
"mac_algorithms": [
  "hmac_sha2_512_etm",
  "umac_128_etm"
],
"host_key_algorithms": [
  "ecdsa_sha2_nistp256",
  "ssh_rsa"
],
"max_authentication_retry_count": 3,
"connections_per_second": 8,
"max_instances": 10,
"is_rsa_in_publickey_algorithms_enabled": true,
"per_source_limit": 5,
"_links": {
  "self": {
    "href": "/api/security/ssh"
  }
}
}
```

Retrieve cluster SSH server ciphers, MAC algorithms, key exchange algorithms, and connection limits

GET `/security/ssh`

Introduced In: 9.7

Retrieves the cluster SSH server ciphers, MAC algorithms, key exchange algorithms, host key algorithms, connection limits, and *ssh-rsa* enabled status for public key algorithms.

Related ONTAP commands

- `security ssh`
- `security protocol ssh`

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ciphers	array[string]	Ciphers for encrypting the data.
connections_per_second	integer	Maximum connections allowed per second.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
max_instances	integer	Maximum possible simultaneous connections.
per_source_limit	integer	Maximum connections from the same client host.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "host_key_algorithms": [
    "ecdsa_sha2_nistp256",
    "ssh_rsa"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256",
    "diffie_hellman_group18_sha512"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the SSH server setting for a cluster

PATCH `/security/ssh`

Introduced In: 9.7

Updates the SSH server setting for a cluster.

Optional parameters

- `ciphers` - Encryption algorithms for the payload
- `key_exchange_algorithms` - SSH key exchange algorithms
- `mac_algorithms` - MAC algorithms

- `host_key_algorithms` - Host key algorithms
- `max_authentication_retry_count` - Maximum authentication retries allowed before closing the connection
- `connections_per_second` - Maximum allowed connections per second
- `max_instances` - Maximum allowed connections per node
- `is_rsa_in_publickey_algorithms_enabled` - *ssh-rsa* enabled status for public key algorithms
- `per_source_limit` - Maximum allowed connections from the same client host

Related ONTAP commands

- `security ssh`
- `security protocol ssh`

Request Body

Name	Type	Description
ciphers	array[string]	Ciphers for encrypting the data.
connections_per_second	integer	Maximum connections allowed per second.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.

Name	Type	Description
max_instances	integer	Maximum possible simultaneous connections.
per_source_limit	integer	Maximum connections from the same client host.

Example request

```
{
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "host_key_algorithms": [
    "ecdsa_sha2_nistp256",
    "ssh_rsa"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256",
    "diffie_hellman_group18_sha512"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ]
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10682372	There must be at least one key exchange algorithm associated with the SSH configuration.
10682373	There must be at least one cipher associated with the SSH configuration.
10682375	Failed to modify SSH key exchange algorithms.
10682378	Failed to modify SSH ciphers.
10682399	Key exchange algorithm not supported in FIPS enabled mode.
10682400	Failed to modify SSH MAC algorithms.
10682401	MAC algorithm not supported in FIPS enabled mode.
10682403	There must be at least one MAC algorithm with the SSH configuration.
10682413	Failed to modify maximum authentication retry attempts.
10682413	Failed to modify maximum authentication retry attempts.
10682418	Cipher not supported in FIPS enabled mode.
10682423	There must be at least one host key algorithm associated with the SSH configuration.
10682424	Host key algorithm not supported in FIPS enabled mode.
10682425	Failed to modify Host key algorithms.
10682426	Failed to modify *ssh-rsa* enabled status for publickey algorithms configuration.
10682428	Cipher not supported in FIPS enabled mode.
10682429	Adding 'diffie_hellman_group16_sha512' or 'diffie_hellman_group18_sha512' to the SSH key exchange algorithms list requires an effective cluster version of ONTAP 9.16.1 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster_ssh_server

Name	Type	Description
ciphers	array[string]	Ciphers for encrypting the data.
connections_per_second	integer	Maximum connections allowed per second.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
max_instances	integer	Maximum possible simultaneous connections.

Name	Type	Description
per_source_limit	integer	Maximum connections from the same client host.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View SSH SVMs

Security SSH svms endpoint overview

Overview

This endpoint is used to retrieve the SSH security configuration for all data SVMs. The configuration consists of SSH security parameters. The security algorithms include SSH key exchange algorithms, ciphers for payload encryption, MAC algorithms, host key algorithms, maximum authentication retry attempts allowed before closing the connection, and *ssh-rsa* enabled status for public key algorithms. The SSH configuration for a newly created SVM is the same as the SSH configuration at cluster level. When the cluster SSH configuration is updated using */security/ssh* endpoint, the SSH configuration of existing SVMs is not impacted. To customize the SSH security parameters for a particular data SVM, perform a PATCH operation on the *api/security/ssh/svms/{svm.uuid}* endpoint.

Example

Retrieving the SSH security configuration of all SVMs.

Retrieves the SSH security configurations associated with the owners or filtered list (for a specific data SVM and so on).

```
# The API:
GET "/api/security/ssh/svms"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/ssh/svms?fields=*"

# The response
{
"records": [
  {
    "svm": {
      "uuid": "739e5da5-1a50-11ee-9cb0-005056bb97dc",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/739e5da5-1a50-11ee-9cb0-005056bb97dc"
        }
      }
     },
     "ciphers": [
       "aes256_ctr",
       "aes192_ctr",
       "aes128_ctr",
       "aes128_gcm",
       "aes256_gcm"
     ],
     "key_exchange_algorithms": [
       "diffie_hellman_group_exchange_sha256",
       "ecdh_sha2_nistp256",
       "ecdh_sha2_nistp384",
       "ecdh_sha2_nistp521",
       "curve25519_sha256",
       "diffie_hellman_group16_sha512",
       "diffie_hellman_group18_sha512"
     ],
     "mac_algorithms": [
       "hmac_sha2_256",
       "hmac_sha2_512",
       "hmac_sha2_256_etm",
       "hmac_sha2_512_etm",
       "umac_64",
       "umac_128",
       "umac_64_etm",
       "umac_128_etm"
     ],
     "host_key_algorithms": [
```

```
        "ecdsa_sha2_nistp256",
        "ssh_rsa",
        "ssh_ed25519"
      ],
      "is_rsa_in_publickey_algorithms_enabled": true,
      "max_authentication_retry_count": 6,
      "_links": {
        "self": {
          "href": "/api/security/ssh/svms/739e5da5-1a50-11ee-9cb0-
005056bb97dc"
        }
      }
    }
  ],
  "num_records": 1,
    "_links": {
      "self": {
        "href": "/api/security/ssh/svms?fields=*"
     }
   }
}

# The call:
curl -X GET "https://<mgmt-ip>/api/security/ssh/svms"

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/security/ssh/svms/02c9e252-41be-11e9-81d5-
00a0986138f7"
      }
    }
  }
],
```

```
"num_records": 1,
  "_links": {
    "self": {
      "href": "/api/security/ssh/svms"
    }
  }
}
```

Retrieve the SSH server configuration for all SVMs

GET `/security/ssh/svms`

Introduced In: 9.10

Retrieves the SSH server configuration for all the data SVMs.

Related ONTAP commands

- `security ssh`

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
mac_algorithms	string	query	False	Filter by mac_algorithms
is_rsa_in_publickey_algorithms_enabled	boolean	query	False	Filter by is_rsa_in_publickey_algorithms_enabled • Introduced in: 9.16
key_exchange_algorithms	string	query	False	Filter by key_exchange_algorithms
ciphers	string	query	False	Filter by ciphers

Name	Type	In	Required	Description
max_authentication_retry_count	integer	query	False	Filter by max_authentication_retry_count • Max value: 6 • Min value: 2
host_key_algorithms	string	query	False	Filter by host_key_algorithms • Introduced in: 9.16
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[svm_ssh_server]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ciphers": [
        "aes256_ctr",
        "aes192_ctr",
        "aes128_ctr"
      ],
      "host_key_algorithms": [
        "ecdsa_sha2_nistp256",
        "ssh_ed25519",
        "ssh_rsa"
      ],
      "key_exchange_algorithms": [
        "diffie_hellman_group_exchange_sha256",
        "ecdh_sha2_nistp256"
      ],
      "mac_algorithms": [
        "hmac_sha2_512",
        "hmac_sha2_512_etm"
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
```

```
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM name and UUID for which the SSH server is configured.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_ssh_server

Name	Type	Description
_links	_links	
ciphers	array[string]	Ciphers for encrypting the data.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.

Name	Type	Description
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
svm	svm	SVM name and UUID for which the SSH server is configured.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SSH security configuration

Security SSH svms svm.uuid endpoint overview

Overview

This endpoint is used to retrieve or modify the SSH security configuration of a data SVM.

The SSH security algorithms include key exchange algorithms, ciphers for payload encryption, MAC algorithms, host key algorithms and the maximum authentication retry attempts allowed before closing the connection. svm.uuid corresponds to the UUID of the SVM for which the SSH security setting is being retrieved or modified and it is obtained from the response body of a GET operation performed on the *api/security/ssh/svms* API.

Examples

Updating the SSH security parameters

Specify the algorithms in the body of the PATCH request.

```
# The API:
PATCH "/api/security/ssh/svms/{svm.uuid}"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/ssh/svms/02c9e252-41be-11e9-
81d5-00a0986138f7" -d '{ "ciphers": [ "aes256_ctr", "aes192_ctr" ],
"key_exchange_algorithms": [ "diffie_hellman_group_exchange_sha256",
"ecdh_sha2_nistp256", "diffie_hellman_group16_sha512" ], "mac_algorithms":
[ "hmac_sha2_512_etm", "umac_128_etm" ], "host_key_algorithms": [
"ecdsa_sha2_nistp256", "ssh_ed25519"
],"is_rsa_in_publickey_algorithms_enabled": false,
"max_authentication_retry_count": 3 }'
```

Retrieving the SSH security configuration of an SVM.

```
# The API:
GET "/api/security/ssh/svms/{svm.uuid}"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/ssh/svms/02c9e252-41be-11e9-
81d5-00a0986138f7"

# The response:
{
"ciphers": [
  "aes256_ctr",
  "aes192_ctr"
],
"key_exchange_algorithms": [
  "diffie_hellman_group_exchange_sha256",
  "ecdh_sha2_nistp256",
  "diffie_hellman_group16_sha512"
],
"mac_algorithms": [
  "hmac_sha2_512_etm",
  "umac_128_etm"
],
"host_key_algorithms": [
  "ecdsa_sha2_nistp256",
  "ssh_ed25519"
],
"is_rsa_in_publickey_algorithms_enabled": false,
"max_authentication_retry_count": 3,
"svm": {
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7",
  "_links": {
    "self": {
      "href": "/api/svm/svms/02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/security/ssh/svms/02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
}
```

Retrieve the SSH server configuration for an SVM

GET `/security/ssh/svms/{svm.uuid}`

Introduced In: 9.10

Retrieves the SSH server configuration for the specified data SVM.

Related ONTAP commands

- `security ssh`

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
ciphers	array[string]	Ciphers for encrypting the data.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.

Name	Type	Description
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
svm	svm	SVM name and UUID for which the SSH server is configured.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "host_key_algorithms": [
    "ecdsa_sha2_nistp256",
    "ssh_ed25519",
    "ssh_rsa"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM name and UUID for which the SSH server is configured.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the SSH server configuration for an SVM

PATCH `/security/ssh/svms/{svm.uuid}`

Introduced In: 9.10

Updates the SSH server configuration for the specified data SVM.

Optional parameters

- `ciphers` - Encryption algorithms for the payload
- `key_exchange_algorithms` - SSH key exchange algorithms
- `host_key_algorithms` - Host key algorithms
- `mac_algorithms` - MAC algorithms
- `max_authentication_retry_count` - Maximum authentication retries allowed before closing the connection
- `is_rsa_in_publickey_algorithms_enabled` - *ssh-rsa* enabled status for public key algorithms

Related ONTAP commands

- `security ssh`

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Request Body

Name	Type	Description
ciphers	array[string]	Ciphers for encrypting the data.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.

Name	Type	Description
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
svm	svm	SVM name and UUID for which the SSH server is configured.

Example request

```
{
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "host_key_algorithms": [
    "ecdsa_sha2_nistp256",
    "ssh_ed25519",
    "ssh_rsa"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ],
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10682372	There must be at least one key exchange algorithm associated with the SSH configuration.
10682373	There must be at least one cipher associated with the SSH configuration.

Error Code	Description
10682375	Failed to modify SSH key exchange algorithms.
10682378	Failed to modify SSH ciphers.
10682399	Key exchange algorithm not supported in FIPS-enabled mode.
10682400	Failed to modify SSH MAC algorithms.
10682401	MAC algorithm not supported in FIPS-enabled mode.
10682403	There must be at least one MAC algorithm with the SSH configuration.
10682413	Failed to modify maximum authentication retry attempts.
10682418	Cipher not supported in FIPS-enabled mode.
10682420	To modify the SSH configuration of the admin SVM, use the /api/security/ssh REST API.
10682423	There must be at least one host key algorithm associated with the SSH configuration.
10682424	Host key algorithm not supported in FIPS enabled mode.
10682425	Failed to modify Host key algorithms.
10682426	Failed to modify *ssh-rsa* enabled status for publickey algorithms configuration.
10682428	Cipher not supported in FIPS enabled mode.
10682429	Adding 'diffie_hellman_group16_sha512' or 'diffie_hellman_group18_sha512' to the SSH key exchange algorithms list requires an effective cluster version of ONTAP 9.16.1 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM name and UUID for which the SSH server is configured.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

svm_ssh_server

Name	Type	Description
ciphers	array[string]	Ciphers for encrypting the data.
host_key_algorithms	array[string]	Host key algorithms. The host key algorithm 'ssh_ed25519' can be configured only in non-FIPS mode.
is_rsa_in_publickey_algorithms_enabled	boolean	Enables or disables the *ssh-rsa* signature scheme, which uses the SHA-1 hash algorithm, for RSA keys in public key algorithms. If this flag is *false*, older SSH implementations might fail to authenticate using RSA keys. This flag should be enabled only as a temporary measure until legacy SSH client implementations can be upgraded or reconfigured with another key type, for example: ECDSA.
key_exchange_algorithms	array[string]	Key exchange algorithms.

Name	Type	Description
mac_algorithms	array[string]	MAC algorithms.
max_authentication_retry_count	integer	Maximum authentication retries allowed before closing the connection.
svm	svm	SVM name and UUID for which the SSH server is configured.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage WebAuthn credentials

Security webauthn credentials endpoint overview

Overview

This API is used to retrieve all WebAuthn credentials entries.

Examples

Retrieving all Webauthn credentials entries

The following output shows all WebAuthn credentials entries.

```
## The API:
/api/security/webauthn/credentials

## The call:
curl -X GET "https://<mgmt-ip>/api/security/webauthn/credentials"

# The response:
{
"records": [
  {
    "owner": {
      "uuid": "389758ee-40cd-11ef-bb21-005056aeae31",
      "_links": {
        "self": {
          "href": "/api/svm/svms/389758ee-40cd-11ef-bb21-005056aeae31"
        }
      }
    },
    "username": "user_1",
    "index": 0,
    "relying_party": {
      "id": "ontap1.example.com",
      "name": "ontap1.example.com"
    },
    "_links": {
      "self": {
        "href": "/api/security/webauthn/credentials/389758ee-40cd-11ef-
bb21-005056aeae31/user_1/0/ontap1.example.com"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/security/webauthn/credentials/"
  }
}
}
```

Retrieve all WebAuthn credentials entries

GET `/security/webauthn/credentials`

Introduced In: 9.16

Retrieves all WebAuthn credentials entries.

Related ONTAP commands

- `security webauthn credentials show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[webauthn_credentials]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "creation_time": "2024-08-05 22:38:55 -0400",
      "credential": {
        "id_sha":
"xxxxxxxxxxxxxxxxxxxxxxxxebfb30f20bf6db74xxxxxxxxxxxxxxxxxxxxxxxxxx",
        "type": "string"
      },
      "display_name": "admin",
      "index": 0,
      "last_used_time": "2024-08-05 22:48:55 -0400",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "public_key": {
        "algorithm": "ES-256",
        "value":
"xxxxxxxxxxxxxxxxxxxxxxe5sZohRRv2B10JjjALXmGRmEfFIxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
```

```
      "scope": "string",
      "username": "admin"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

credential

Name	Type	Description
id_sha	string	SHA-256 Hashed representation of Credential ID.
type	string	Credential type.

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

public_key

Name	Type	Description
algorithm	string	Public key algorithm.
value	string	Public key value.

relying_party

Name	Type	Description
id	string	Relying Party ID.
name	string	Relying Party Name.

webauthn_credentials

Name	Type	Description
_links	self_link	
creation_time	string	Date and time indicating when this entry was created.
credential	credential	
display_name	string	Display name.
index	integer	Index.
last_used_time	string	Date and time indicating when this entry was last used.
owner	svm_reference	SVM, applies only to SVM-scoped objects.
public_key	public_key	
relying_party	relying_party	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
username	string	Username.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a WebAuthn credentials entry

DELETE `/security/webauthn/credentials/{owner.uuid}/{username}/{index}/{relying_party.id}`

Introduced In: 9.16

Deletes a WebAuthn credentials entry.

Required properties

- `owner.uuid`
- `username`
- `index`
- `relying_party.id`

Related ONTAP commands

- `security webauthn credentials delete`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
username	string	path	True	Username.

Name	Type	In	Required	Description
index	integer	path	True	Index.
relying_party.id	string	path	True	Relying Party ID.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a WebAuthn credentials entry

GET
`/security/webauthn/credentials/{owner.uuid}/{username}/{index}/{relying_party.id}`

Introduced In: 9.16

Retrieves a WebAuthn credentials entry.

Related ONTAP commands

- `security webauthn credentials show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
username	string	path	True	Username.
index	integer	path	True	Index.
relying_party.id	string	path	True	Relying Party ID.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
creation_time	string	Date and time indicating when this entry was created.
credential	credential	
display_name	string	Display name.
index	integer	Index.
last_used_time	string	Date and time indicating when this entry was last used.
owner	svm_reference	SVM, applies only to SVM-scoped objects.
public_key	public_key	
relying_party	relying_party	
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
username	string	Username.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "creation_time": "2024-08-05 22:38:55 -0400",
  "credential": {
    "id_sha":
"xxxxxxxxxxxxxxxxxxxxxxxxebfb30f20bf6db74xxxxxxxxxxxxxxxxxxxxxxxxxx",
    "type": "string"
  },
  "display_name": "admin",
  "index": 0,
  "last_used_time": "2024-08-05 22:48:55 -0400",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "public_key": {
    "algorithm": "ES-256",
    "value":
"xxxxxxxxxxxxxxxxxxxxxxe5sZohRRv2B10JjjALXmGRmEfFIxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

credential

Name	Type	Description
id_sha	string	SHA-256 Hashed representation of Credential ID.
type	string	Credential type.

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

public_key

Name	Type	Description
algorithm	string	Public key algorithm.

Name	Type	Description
value	string	Public key value.

relying_party

Name	Type	Description
id	string	Relying Party ID.
name	string	Relying Party Name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View WebAuthn global settings for a cluster and all SVMs

Security webauthn global-settings endpoint overview

Overview

This API endpoint retrieves WebAuthn global settings for a cluster and all SVMs.

Examples

Retrieving the WebAuthn global settings

Retrieves all of the WebAuthn global settings for the cluster and all SVMs.

```
# The API:
GET "/api/security/webauthn/global-settings"

# The call to retrieve the WebAuthn global settings:
curl -k https://<mgmt-ip>/api/security/webauthn/global-settings
```

Retrieve WebAuthn global settings for a cluster and all SVMs

GET `/security/webauthn/global-settings`

Introduced In: 9.16

Retrieve WebAuthn global settings for a cluster and all SVMs.

Related ONTAP commands

- `security webauthn show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[webauthn_global]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "attestation": "none",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "require_rk": "",
      "resident_key": "discouraged",
      "scope": "string",
      "timeout": 600000,
      "user_verification": "discouraged"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

webauthn_global

WebAuthn global settings.

Name	Type	Description
_links	self_link	
attestation	string	Attestation conveyance type.

Name	Type	Description
owner	svm_reference	SVM, applies only to SVM-scoped objects.
require_rk	boolean	Specifies whether the resident key is required.
resident_key	string	Resident key.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
timeout	integer	The timeout interval for the WebAuthn request, in milliseconds.
user_verification	string	User verification.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View a WebAuthn global setting entry

Security webauthn global-settings owner.uuid endpoint overview

Overview

This API endpoint retrieves WebAuthn global settings for the cluster or SVM.
Specify the owner UUID and the unique identifier for the cluster or SVM to retrieve the WebAuthn global settings for the cluster or SVM.

Examples

Retrieving the WebAuthn global settings for the cluster or SVM

```
# The API:
GET "/api/security/webauthn/global-settings/{owner.uuid}"

# The call:
curl -k https://<mgmt-ip>/api/security/webauthn/global-settings/d49de271-
8c11-11e9-8f78-005056bbf6ac
```

Retrieve a WebAuthn global setting entry

GET `/security/webauthn/global-settings/{owner.uuid}`

Introduced In: 9.16

Retrieves a WebAuthn global setting entry.

Related ONTAP commands

- `security webauthn show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	

Name	Type	Description
attestation	string	Attestation conveyance type.
owner	svm_reference	SVM, applies only to SVM-scoped objects.
require_rk	boolean	Specifies whether the resident key is required.
resident_key	string	Resident key.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
timeout	integer	The timeout interval for the WebAuthn request, in milliseconds.
user_verification	string	User verification.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "attestation": "none",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "require_rk": "",
  "resident_key": "discouraged",
  "scope": "string",
  "timeout": 600000,
  "user_verification": "discouraged"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

View all WebAuthn supported algorithms

Security webauthn supported-algorithms endpoint overview

Overview

This API endpoint retrieves the list of supported algorithms for WebAuthn authentication.

Examples

Retrieving the list of supported algorithms

This endpoint retrieves all of the supported algorithms for WebAuthn authentication. The following table lists the supported algorithms:

Algorithm ID	Algorithm Name	Description
-7	ES256	ECDSA w/ SHA-256
-35	ES384	ECDSA w/ SHA-384
-257	RS256	RSASSA-PKCS1-v1_5 using SHA-256

```
# The API:
GET "/api/security/webauthn/supported-algorithms"

# The call to retrieve the list of supported algorithms:
curl -k https://<mgmt-ip>/api/security/webauthn/supported-algorithms
```

Retrieve all WebAuthn supported algorithms entries

GET `/security/webauthn/supported-algorithms`

Introduced In: 9.16

Retrieve all WebAuthn supported algorithms entries.

Related ONTAP commands

- `security webauthn supported-algorithms show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.

Name	Type	Description
records	array[supported_algorithms]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "algorithm": {
        "id": -7,
        "name": "ES-256",
        "type": "string"
      },
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

algorithm

Name	Type	Description
id	integer	Algorithm ID.
name	string	Algorithm name.
type	string	Algorithm type.

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

supported_algorithms

WebAuthn supported algorithms.

Name	Type	Description
_links	self_link	
algorithm	algorithm	
owner	svm_reference	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View a WebAuthn supported algorithms entry

Security webauthn supported-algorithms owner.uuid algorithm.name endpoint overview

Overview

This API endpoint retrieves a specific WebAuthn supported algorithms entry.
Specify the owner UUID, the unique identifier for the cluster or SVM, and the algorithm name to retrieve the specific WebAuthn supported algorithms entry.

Examples

Retrieving the specific WebAuthn supported algorithms entry

```
# The API:
GET "/api/security/webauthn/supported-algorithms/{owner.uuid}/{alg_name}"

# The call:
curl -k https://<mgmt-ip>/api/security/webauthn/supported-
algorithms/d49de271-8c11-11e9-8f78-005056bbf6ac/ES-256
```

Retrieve a WebAuthn supported algorithms entry

GET `/security/webauthn/supported-algorithms/{owner.uuid}/{algorithm.name}`

Introduced In: 9.16

Retrieves a WebAuthn supported algorithms entry.

Related ONTAP commands

- `security webauthn supported-algorithms show`

Parameters

Name	Type	In	Required	Description
owner.uuid	string	path	True	Used to identify a cluster or an SVM.
algorithm.name	string	path	True	Algorithm name.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
algorithm	algorithm	
owner	svm_reference	SVM, applies only to SVM-scoped objects.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "algorithm": {
    "id": -7,
    "name": "ES-256",
    "type": "string"
  },
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

algorithm

Name	Type	Description
id	integer	Algorithm ID.
name	string	Algorithm name.
type	string	Algorithm type.

_links

Name	Type	Description
self	href	

svm_reference

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

SnapLock

SnapLock overview

SnapLock is an alternative to the traditional optical "write once, read many" (WORM) data. SnapLock is used for the storage of read-only WORM data. SnapLock is a license-based, disk-based, open-protocol feature that works with application software to administer non-rewritable storage of data. The primary objective of this feature is to provide storage-enforced WORM and retention functionality. SnapLock can be deployed for protecting data in strict regulatory environments in such a way that even the storage administrator is considered an untrusted party. SnapLock provides special purpose volumes in which files can be stored and committed to a non-erasable, non-rewritable state either forever or for a designated retention period. SnapLock allows this retention to be performed at the granularity of individual files.
These APIs allow you to manage the following endpoints:

- SnapLock log
- SnapLock compliance-clock
- SnapLock event-retention
- SnapLock file retention
- SnapLock privileged-delete
- SnapLock file fingerprint
- SnapLock legal-hold

APIs

SnapLock log

These APIs are used to create and initialize the SnapLock log configuration for an SVM, modify attributes associated with the SnapLock log configuration,and delete the auditlog configuration.

SnapLock compliance-clock

This API manages the ComplianceClock of the system. ComplianceClock determines the expiry time of the SnapLock objects in the system. ComplianceClock can be initialized only once by the user and once it is set, it cannot be changed or altered by the user.

SnapLock event-retention

This API is used to create Event Based Retention (EBR) policies for an SVM. A policy consists of a policy-name and a retention-period. Only a user with security login role vsadmin-snaplock is allowed to perform this operation.

SnapLock file retention

This API is used to set the retention time of a file. Retention time expects the date in ISO 8601 format or "infinite".

SnapLock privileged-delete

This API is used to perform a privileged-delete operation on unexpired WORM files on a SnapLock Enterprise volume. The only built-in role that has access to the command is "vsadmin-snaplock".

SnapLock file fingerprint

This API is used to start the fingerprint computation on a file.

SnapLock legal-hold

This API is used to retain Compliance-mode WORM files for the duration of a litigation. A file under a Legal-Hold behaves like a WORM file with an indefinite retention period. Only a user with security login role vsadmin-snaplock is allowed to perform the operation.

Manage SnapLock audit logs

Storage SnapLock audit-logs endpoint overview

The SnapLock log volume can be a SnapLock Compliance volume or SnapLock Enterprise volume. The SnapLock log infrastructure creates directories and files in this volume to store the SnapLock log records. The directory named "snaplock_log" is created under the root. There are three subdirectories created under the "snaplock_log" directory. They are "privileged_delete_logs", "system_logs" and "legal_hold_logs". The log files are created and populated under these subdirectories when respective SnapLock operations are initiated. The maximum log size specifies the maximum size of a log file that stores SnapLock log records. When the file reaches this size, the log infrastructure archives it and creates a new log file. An active log file has the suffix "-present" in the name. When a file is archived, it is renamed such that the suffix is replaced with the date of archival. The default retention period is the length of time the log file is retained, if the SnapLock log records that are stored in the file do not carry any retention period.

Examples

1. Verifies that the audit log is configured for the specified SVM:

```
GET "/api/storage/snaplock/audit-logs/?svm.name=VS0"
```

1. Verifies that the specified volume is an audit log volume:

```
GET "/api/storage/snaplock/audit-logs/?log_volume.volume.name=VS0_ALOG"
```

Examples

1. Creates a SnapLock log configuration by providing SVM name:

```
POST "/api/storage/snaplock/audit-logs" '{"svm": {"name":"VS3"},
"log_volume": { "volume": { "name":"VS3_ALOG"}, "max_log_size":"20971520",
"retention_period":"P30Y" }}'
```

1. Creates a SnapLock log configuration by providing SVM UUID:

```
POST "/api/storage/snaplock/audit-logs" '{"svm": {"uuid":"bc744cc7-296d-
11e9-a26f-0050568e5b05"}, "log_volume": { "volume": { "name":"VS3_ALOG"},
"max_log_size":"20971520", "retention_period":"P30Y" }}'
```

1. Creates a SnapLock log configuration without specifying a retention period:

```
POST "/api/storage/snaplock/audit-logs" '{"svm": {"name":"VS3"},
"log_volume": {"volume": {"name":"VS3_ALOG"}}}'
```

Examples

1. Updates the audit log volume:

```
PATCH "/api/storage/snaplock/audit-logs/bc744cc7-296d-11e9-a26f-
0050568e5b05" '{"log_volume":{"volume":{"name":"VS4_ALOG_NEW"}}}'
```

1. Updates the maximum size of the log file and the retention period:

```
PATCH "/api/storage/snaplock/audit-logs/420cac7a-296a-11e9-a26f-
0050568e5b05" '{"log_volume":{"max_log_size":"20971520",
"retention_period":"P1Y"}}'
```

1. Archives all of the audit log files:

```
PATCH "/api/storage/snaplock/audit-logs/c7e4fa7d-2968-11e9-a26f-
0050568e5b05" '{"log_archive":{"archive":"true"}}'
```

1. Archives the specified audit log file:

```
 PATCH "/api/storage/snaplock/audit-logs/c7e4fa7d-2968-11e9-a26f-
0050568e5b05"
'{"log_archive":{"archive":"true","base_name":"privileged_delete"}}'
```

Retrieve SVMs configured with audit log volumes

GET `/storage/snaplock/audit-logs`

Introduced In: 9.7

Retrieves a list of SVMs configured with audit log volumes.

Related ONTAP commands

- `snaplock log show`

Learn more

- DOC /storage/snaplock/audit-logs

Parameters

Name	Type	In	Required	Description
log_files.path	string	query	False	Filter by log_files.path
log_files.size	integer	query	False	Filter by log_files.size
log_files.base_name	string	query	False	Filter by log_files.base_name
log_files.expiry_time	string	query	False	Filter by log_files.expiry_time
log_volume.volume.uuid	string	query	False	Filter by log_volume.volume.uuid
log_volume.volume.name	string	query	False	Filter by log_volume.volume.name
log_volume.max_log_size	integer	query	False	Filter by log_volume.max_log_size

Name	Type	In	Required	Description
log_volume.retention_period	string	query	False	Filter by log_volume.retention_period
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snaplock_log]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "log_archive": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "base_name": "string"
      },
      "log_files": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "base_name": "string",
          "expiry_time": "2058-06-04 15:00:00 -0400",
          "path": "/snaplock_log/system_logs/20180822_005947_GMT-
present",
          "size": 20000
        }
      ],
      "log_volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "max_log_size": 20971520,
        "retention_period": "P30M",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

log_archive

Name	Type	Description
_links	_links	
archive	boolean	Archive the specified SnapLock log file for the given base_name, and create a new log file. If base_name is not mentioned, archive all log files.
base_name	string	Base name of log archive

snaplock_log_file

Name	Type	Description
_links	_links	
base_name	string	Base name of log file
expiry_time	string	Expiry time of the log file in date-time format. Value '9999-12-31T00:00:00Z' indicates infinite expiry time.
path	string	Absolute path of the log file in the volume

Name	Type	Description
size	integer	Size of the log file in bytes

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_log_volume

Name	Type	Description
_links	_links	
max_log_size	integer	Maximum size of log file in bytes

Name	Type	Description
retention_period	string	Specifies the default log record retention period. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, minutes and seconds. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. A duration in hours, minutes and seconds is represented by "PT<num>H", "PT<num>M", and "PT<num>S" respectively. The period string must contain only a single time element i.e. either years, months, days, hours, minutes or seconds. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the string "infinite".</num></num></num></num></num></num>
volume	volume	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_log

Name	Type	Description
_links	_links	
log_archive	log_archive	
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a SnapLock log configuration for an SVM

POST `/storage/snaplock/audit-logs`

Introduced In: 9.7

Creates a SnapLock log configuration for an SVM. A SnapLock log configuration consists of a volume to store the log, the maximum size of the log file, and the default period of time for which the log file should be retained. The volume must be a Read-Write SnapLock volume of type Enterprise or Compliance. The input parameter retention_period expects the duration in ISO 8601 format.

Required properties

- `svm.uuid` or `svm.name` - Name or UUID of the SVM.
- `log_volume.volume.name` or `log_volume.volume.uuid` - Name or UUID of audit log volume.

Recommended optional properties

- `log_volume.max_log_size` - Max log file size.
- `log_volume.volume.retention_period` - Retention period of log file.

Default property values

If not specified in POST, the following default property values are assigned:

- `log_volume.retention_period` - *P6M*
- `log_volume.max_log_size` - *10MB*

Related ONTAP commands

- `snaplock log create`

Learn more

- DOC /storage/snaplock/audit-logs

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "log_files": [
    {
      "base_name": "string",
      "expiry_time": "2058-06-04 15:00:00 -0400",
      "path": "/snaplock_log/system_logs/20180822_005947_GMT-present",
      "size": 20000
    }
  ],
  "log_volume": {
    "max_log_size": 20971520,
    "retention_period": "P30M",
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
918236	The specified volume name and UUID refer to different volumes
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format
13763161	Audit logging is already configured for the SVM
14090340	{field} is a required field
14090343	Invalid Field
14090346	Internal Error. Wait a few minutes, then try the command again

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

log_archive

Name	Type	Description
archive	boolean	Archive the specified SnapLock log file for the given base_name, and create a new log file. If base_name is not mentioned, archive all log files.
base_name	string	Base name of log archive

snaplock_log_file

Name	Type	Description
base_name	string	Base name of log file
expiry_time	string	Expiry time of the log file in date-time format. Value '9999-12-31T00:00:00Z' indicates infinite expiry time.
path	string	Absolute path of the log file in the volume
size	integer	Size of the log file in bytes

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_log_volume

Name	Type	Description
max_log_size	integer	Maximum size of log file in bytes
retention_period	string	Specifies the default log record retention period. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, minutes and seconds. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. A duration in hours, minutes and seconds is represented by "PT<num>H", "PT<num>M", and "PT<num>S" respectively. The period string must contain only a single time element i.e. either years, months, days, hours, minutes or seconds. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the string "infinite".</num></num></num></num></num></num>
volume	volume	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_log

Name	Type	Description
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	
svm	svm	SVM, applies only to SVM-scoped objects.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Disassociate SnapLock audit logs

DELETE `/storage/snaplock/audit-logs/{svm.uuid}`

Introduced In: 9.7

Disassociates a SnapLock volume as the audit log volume for an SVM. This API closes all the active log files in the log volume and marks the volume as disabled for SnapLock logging.

Related ONTAP commands

- `snaplock log delete`

Learn more

- DOC /storage/snaplock/audit-logs

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090346	Internal Error. Wait a few minutes, then try the command again

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SnapLock audit logs

GET `/storage/snaplock/audit-logs/{svm.uuid}`

Introduced In: 9.7

Retrieves SnapLock logs for the specified SVM.

Related ONTAP commands

- `snaplock log show`

Learn more

- DOC /storage/snaplock/audit-logs

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
log_archive	log_archive	
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	
svm	svm	SVM, applies only to SVM-scoped objects.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "log_archive": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "base_name": "string"
  },
  "log_files": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "base_name": "string",
      "expiry_time": "2058-06-04 15:00:00 -0400",
      "path": "/snaplock_log/system_logs/20180822_005947_GMT-present",
      "size": 20000
    }
  ],
  "log_volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_log_size": 20971520,
    "retention_period": "P30M",
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
```

```
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

log_archive

Name	Type	Description
_links	_links	
archive	boolean	Archive the specified SnapLock log file for the given base_name, and create a new log file. If base_name is not mentioned, archive all log files.
base_name	string	Base name of log archive

snaplock_log_file

Name	Type	Description
_links	_links	
base_name	string	Base name of log file
expiry_time	string	Expiry time of the log file in date-time format. Value '9999-12-31T00:00:00Z' indicates infinite expiry time.
path	string	Absolute path of the log file in the volume
size	integer	Size of the log file in bytes

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_log_volume

Name	Type	Description
_links	_links	
max_log_size	integer	Maximum size of log file in bytes

Name	Type	Description
retention_period	string	Specifies the default log record retention period. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, minutes and seconds. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. A duration in hours, minutes and seconds is represented by "PT<num>H", "PT<num>M", and "PT<num>S" respectively. The period string must contain only a single time element i.e. either years, months, days, hours, minutes or seconds. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the string "infinite".</num></num></num></num></num></num>
volume	volume	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update SnapLock audit logs

PATCH `/storage/snaplock/audit-logs/{svm.uuid}`

Introduced In: 9.7

Updates one of the following:

- the audit log volume,
- the attributes of the audit log volume present, or
- archive the current audit log files

Related ONTAP commands

- `snaplock log modify`

Learn more

- DOC /storage/snaplock/audit-logs

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	SVM UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
log_archive	log_archive	
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	

Example request

```
{
  "log_archive": {
    "base_name": "string"
  },
  "log_files": [
    {
      "base_name": "string",
      "expiry_time": "2058-06-04 15:00:00 -0400",
      "path": "/snaplock_log/system_logs/20180822_005947_GMT-present",
      "size": 20000
    }
  ],
  "log_volume": {
    "max_log_size": 20971520,
    "retention_period": "P30M",
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090344	If log_volume is specified, then log_archive must not be specified
14090345	If log_archive.base_name is specified, then log_archive.archive must also be specified
14090346	Internal Error. Wait a few minutes, then try the command again

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

log_archive

Name	Type	Description
archive	boolean	Archive the specified SnapLock log file for the given base_name, and create a new log file. If base_name is not mentioned, archive all log files.
base_name	string	Base name of log archive

snaplock_log_file

Name	Type	Description
base_name	string	Base name of log file
expiry_time	string	Expiry time of the log file in date-time format. Value '9999-12-31T00:00:00Z' indicates infinite expiry time.
path	string	Absolute path of the log file in the volume
size	integer	Size of the log file in bytes

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_log_volume

Name	Type	Description
max_log_size	integer	Maximum size of log file in bytes
retention_period	string	Specifies the default log record retention period. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, minutes and seconds. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. A duration in hours, minutes and seconds is represented by "PT<num>H", "PT<num>M", and "PT<num>S" respectively. The period string must contain only a single time element i.e. either years, months, days, hours, minutes or seconds. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the string "infinite".</num></num></num></num></num></num>
volume	volume	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_log

Name	Type	Description
log_archive	log_archive	
log_files	array[snaplock_log_file]	
log_volume	snaplock_log_volume	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage the SnapLock ComplianceClock

Storage SnapLock compliance-clocks endpoint overview

This API manages the ComplianceClock of the system. ComplianceClock determines the expiry time of the SnapLock objects in the system. The user can initialize the ComplianceClock. The ComplianceClock can be re-initialized if all nodes in the cluster are healthy, all volumes are in online state, no volumes are present in the volume recovery queue and there are no SnapLock volumes or volumes with "snapshot-locking-enabled" set to true or S3 buckets with object locking enabled.

Retrieve the SnapLock ComplianceClock for nodes in a cluster

GET `/storage/snaplock/compliance-clocks`

Introduced In: 9.7

Retrieves the SnapLock ComplianceClock for all of the nodes in the cluster.

Related ONTAP commands

- `snaplock compliance-clock show`

Learn more

- DOC /storage/snaplock/compliance-clocks

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snaplock_compliance_clock]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "time": "2018-06-04 15:00:00 -0400"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

snaplock_compliance_clock

Name	Type	Description
_links	_links	
node	node	
time	string	Compliance clock time

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Initialize a SnapLock ComplianceClock

POST `/storage/snaplock/compliance-clocks`

Introduced In: 9.10

Initializes the SnapLock ComplianceClock.

Required properties

- `node.name` or `node.uuid` - Name or UUID of the node.

Related ONTAP commands

- `snaplock compliance-clock initialize`

Learn more

- DOC /storage/snaplock/compliance-clocks

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
node	node	
time	string	Compliance clock time

Example request

```
{
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "time": "2018-06-04 15:00:00 -0400"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763062	Compliance Clock already initialized
13763084	ComplianceClock re-initialization failed as it requires that all nodes in the cluster are healthy, all volumes are in online state, no volumes are present in the volume recovery queue and there are no SnapLock volumes or volumes with "snapshot-locking-enabled" set to true or S3 buckets with object locking enabled.
13763085	ComplianceClock re-initialization supported on effective cluster version of ONTAP 9.14.1 or later.
14090240	Node with the specified UUID does not exist
14090241	The specified node name and node UUID refer to different nodes
14090343	Invalid field

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

snaplock_compliance_clock

Name	Type	Description
node	node	
time	string	Compliance clock time

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a SnapLock ComplianceClock for a node

GET `/storage/snaplock/compliance-clocks/{node.uuid}`

Introduced In: 9.7

Retrieves the SnapLock ComplianceClock for a specific node.

Related ONTAP commands

- `snaplock compliance-clock show`

Learn more

- DOC /storage/snaplock/compliance-clocks

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
node	node	
time	string	Compliance clock time

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "time": "2018-06-04 15:00:00 -0400"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090240	A node with the specified UUID does not exist
14090446	Invalid session ID

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage event based retention operations

Storage SnapLock event-retention operations endpoint overview

Use this API to display all Event Based Retention (EBR) operations and to apply an EBR policy on a specified

volume or path within the volume. Only a user with security login role vsadmin-snaplock can perform the operation.

Examples

1. Displays all of the EBR operations:

```
GET "/api/storage/snaplock/event-retention/operations"
```

1. Displays all completed EBR operations:

```
GET "/api/storage/snaplock/event-retention/operations?state=completed"
```

1. Displays all completed EBR operations with filter set as volume.uuid:

```
GET "/api/storage/snaplock/event-
retention/operations?volume.uuid=b96f976e-404b-11e9-bff2-0050568e4dbe"
```

1. Displays all of the EBR operations with filter set as volume.name:

```
GET "/api/storage/snaplock/event-retention/operations?volume.name=SLCVOL"
```

Examples

1. Applies an EBR policy on a specific path:

```
POST "/api/storage/snaplock/event-retention/operations"
'{"volume.name":"SLCVOL", "policy.name":"p1day", "path":"/dir1/file.txt"}'
```

1. Applies an EBR policy on the complete volume:

```
POST "/api/storage/snaplock/event-retention/operations"
'{"volume.name":"SLCVOL", "policy.name":"p1day", "path":"/"}'
```

Example

```
DELETE "/api/storage/snaplock/event-retention/operations/16842999"
```

Retrieve EBR operations

GET `/storage/snaplock/event-retention/operations`

Introduced In: 9.7

Retrieves a list of all EBR operations.

Related ONTAP commands

- `snaplock event-retention show`

Learn more

- DOC /storage/snaplock/event-retention/operations

Parameters

Name	Type	In	Required	Description
volume.uuid	string	query	False	Volume UUID
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[ebr_operation]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 16842759,
      "num_files_failed": 0,
      "num_files_processed": 50,
      "num_files_skipped": 2,
      "num_inodes_ignored": 2,
      "path": "/dir1/file",
      "policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "retention_period": "P30M"
      },
      "state": "completed",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090242	Only a user with the security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

policy

Name	Type	Description
_links	_links	
name	string	Specifies the EBR policy name

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

ebr_operation

Name	Type	Description
_links	_links	
id	integer	Operation ID
num_files_failed	integer	Specifies the number of files on which the application of EBR policy failed.
num_files_processed	integer	Specifies the number of files on which EBR policy was applied successfully.
num_files_skipped	integer	Specifies the number of files on which the application of EBR policy was skipped.
num_inodes_ignored	integer	Specifies the number of inodes on which the application of EBR policy was not attempted because they were not regular files.
path	string	The path for the EBR operation. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.

Name	Type	Description
policy	policy	
state	string	Specifies the operation status of an EBR operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an EBR policy

POST `/storage/snaplock/event-retention/operations`

Introduced In: 9.7

Start an EBR operation. This operation applies an EBR policy to a specific volume or to a path within the volume.

Required properties

- `path` - Path of the file.
- `policy.name` - Name of the EBR policy.
  Either volume.name or volume.uuid must be specified when applying EBR policy to the volume or a path within the volume.

- `volume.name` - Volume name.
- `volume.uuid` - Volume uuid.

Related ONTAP commands

- `snaplock event-retention apply`

Learn more

- DOC /storage/snaplock/event-retention/operations

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
id	integer	Operation ID
num_files_failed	integer	Specifies the number of files on which the application of EBR policy failed.
num_files_processed	integer	Specifies the number of files on which EBR policy was applied successfully.
num_files_skipped	integer	Specifies the number of files on which the application of EBR policy was skipped.
num_inodes_ignored	integer	Specifies the number of inodes on which the application of EBR policy was not attempted because they were not regular files.
path	string	The path for the EBR operation. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.

Name	Type	Description
policy	policy	
state	string	Specifies the operation status of an EBR operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example request

```
{
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 50,
  "num_files_skipped": 2,
  "num_inodes_ignored": 2,
  "path": "/dir1/file",
  "policy": {
    "name": "string",
    "retention_period": "P30M"
  },
  "state": "completed",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
id	integer	Operation ID

Name	Type	Description
num_files_failed	integer	Specifies the number of files on which the application of EBR policy failed.
num_files_processed	integer	Specifies the number of files on which EBR policy was applied successfully.
num_files_skipped	integer	Specifies the number of files on which the application of EBR policy was skipped.
num_inodes_ignored	integer	Specifies the number of inodes on which the application of EBR policy was not attempted because they were not regular files.
path	string	The path for the EBR operation. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
policy	policy	
state	string	Specifies the operation status of an EBR operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example response

```
{
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 50,
  "num_files_skipped": 2,
  "num_inodes_ignored": 2,
  "path": "/dir1/file",
  "policy": {
    "name": "string",
    "retention_period": "P30M"
  },
  "state": "completed",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
918236	The specified volume uuid and volume name refer to different volumes.
13763372	Path should be given in the format "\/<dir path>".
14090242	Only a user with the security login role "vsadmin-snaplock" is allowed to perform this operation.

See Definitions

href

Name	Type	Description
href	string	

_links

policy

Name	Type	Description
name	string	Specifies the EBR policy name
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

ebr_operation

Name	Type	Description
id	integer	Operation ID
num_files_failed	integer	Specifies the number of files on which the application of EBR policy failed.
num_files_processed	integer	Specifies the number of files on which EBR policy was applied successfully.
num_files_skipped	integer	Specifies the number of files on which the application of EBR policy was skipped.

Name	Type	Description
num_inodes_ignored	integer	Specifies the number of inodes on which the application of EBR policy was not attempted because they were not regular files.
path	string	The path for the EBR operation. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
policy	policy	
state	string	Specifies the operation status of an EBR operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Cancel an ongoing EBR operation

DELETE `/storage/snaplock/event-retention/operations/{id}`

Introduced In: 9.7

Aborts an ongoing EBR operation.

Related ONTAP commands

- `snaplock event-retention abort`

Learn more

- DOC /storage/snaplock/event-retention/operations

Parameters

Name	Type	In	Required	Description
id	string	path	True	Unique identifier of an EBR operation

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090541	A completed or failed operation cannot be aborted
14090242	Only a user with the security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve attributes for an EBR operation

GET `/storage/snaplock/event-retention/operations/{id}`

Introduced In: 9.7

Retrieves a list of attributes for an EBR operation.

Related ONTAP commands

- `snaplock event-retention show`

Learn more

- DOC /storage/snaplock/event-retention/operations

Parameters

Name	Type	In	Required	Description
id	string	path	True	Unique identifier of an EBR operation
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
id	integer	Operation ID
num_files_failed	integer	Specifies the number of files on which the application of EBR policy failed.
num_files_processed	integer	Specifies the number of files on which EBR policy was applied successfully.
num_files_skipped	integer	Specifies the number of files on which the application of EBR policy was skipped.
num_inodes_ignored	integer	Specifies the number of inodes on which the application of EBR policy was not attempted because they were not regular files.

Name	Type	Description
path	string	The path for the EBR operation. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
policy	policy	
state	string	Specifies the operation status of an EBR operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 50,
  "num_files_skipped": 2,
  "num_inodes_ignored": 2,
  "path": "/dir1/file",
  "policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "string",
    "retention_period": "P30M"
  },
  "state": "completed",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090242	Only a user with the security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

policy

Name	Type	Description
_links	_links	
name	string	Specifies the EBR policy name
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage event based retention policies

Storage SnapLock event-retention policies endpoint overview

An event retention policy consists of a policy-name and a retention-period. The policy can be applied to a single file or files in a directory. Only a user with the security login role vsadmin-snaplock can perform the operation. EBR policies cannot be applied to files under a Legal-Hold.

Examples

1. Creates an EBR policy policy_name with a retention period of "10 years":

```
 POST "/api/storage/snaplock/event-retention/policies/" '{"name":
"policy_name","retention_period": "P10Y"}'
```

1. Creates an EBR policy policy_name1 with a retention period of "infinite":

```
 POST "/api/storage/snaplock/event-retention/policies/" '{"name":
"policy_name1","retention_period": "infinite"}'
```

Retrieve event retention policies for an SVM

GET `/storage/snaplock/event-retention/policies`

Introduced In: 9.7

Retrieves all event retention policies for an SVM.

Related ONTAP commands

- `snaplock event-retention policy show`

Learn more

- DOC /storage/snaplock/event-retention/policies

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records

Name	Type	Description
records	array[snaplock_retention_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "string",
      "retention_period": "P30M",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format or infinite or unspecified.
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_retention_policy

Name	Type	Description
_links	_links	
name	string	Specifies the EBR policy name

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an EBR policy for an SVM

POST `/storage/snaplock/event-retention/policies`

Introduced In: 9.7

Creates an Event Based Retention (EBR) policy for an SVM. The input parameter retention_period expects the duration in ISO 8601 format or infinite.

Required properties

- `name` - Event retention policy name.
- `retention_period` - Retention period of the EBR policy.

Related ONTAP commands

- `snaplock event-retention policy create`

Learn more

- DOC /storage/snaplock/event-retention/policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
name	string	Specifies the EBR policy name

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "name": "string",
  "retention_period": "P30M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
name	string	Specifies the EBR policy name
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "name": "string",
  "retention_period": "P30M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format or infinite or unspecified.
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
13763402	Policy name already exists.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_retention_policy

Name	Type	Description
name	string	Specifies the EBR policy name

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an EBR policy

DELETE `/storage/snaplock/event-retention/policies/{policy.name}`

Introduced In: 9.7

Deletes the specified Event Based Retention (EBR) policy.

Related ONTAP commands

- `snaplock event-retention policy delete`

Example

Delete the specified Event Based Retention policy "policy_name":

```
DELETE "/api/storage/snaplock/event-retention/policies/{policy.name}"
```

Learn more

- DOC /storage/snaplock/event-retention/policies

Parameters

Name	Type	In	Required	Description
policy.name	string	path	True	Name of the retention policy

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve attributes of an EBR policy

GET `/storage/snaplock/event-retention/policies/{policy.name}`

Introduced In: 9.7

Retrieves a list of attributes of the specified Event Based Retention (EBR) policy.

Related ONTAP commands

- `snaplock event-retention policy show`

Learn more

- DOC /storage/snaplock/event-retention/policies

Parameters

Name	Type	In	Required	Description
policy.name	string	path	True	Name of the retention policy
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
name	string	Specifies the EBR policy name
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "string",
  "retention_period": "P30M",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the retention period of an EBR policy

PATCH `/storage/snaplock/event-retention/policies/{policy.name}`

Introduced In: 9.7

Updates the retention period of an Event Based Retention (EBR) policy.

Related ONTAP commands

- `snaplock event-retention policy modify`

Example

Updates the retention period of an EBR policy "policy_name":

```
PATCH "/api/storage/snaplock/event-retention/policies/{policy.name}"
'{"retention_period": "P20Y"}'
```

Learn more

- DOC /storage/snaplock/event-retention/policies

Parameters

Name	Type	In	Required	Description
policy.name	string	path	True	Name of the retention policy

Request Body

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

Example request

```
{
  "retention_period": "P30M",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format or infinite or unspecified.
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snaplock_retention_policy

Name	Type	Description
retention_period	string	Specifies the retention period of an event based retention policy. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours or minutes. A period specified for years, months and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively. For example "P10Y" represents a duration of 10 years. Similarly, a duration in hours, minutes is represented by "PT<num>H", "PT<num>M" respectively. The period string must contain only a single time element i.e. either years, months, days, hours or minutes. A duration which combines different periods is not supported, example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the retention period field also accepts the strings "infinite" and "unspecified".</num></num></num></num></num>
svm	svm	SVM, applies only to SVM-scoped objects.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View key information about files and volumes

Storage SnapLock file-fingerprints endpoint overview

Use this API to view key information about files and volumes, including the file type (regular, WORM, or WORM appendable), the volume expiration date, and so on.

Retrieve fingerprint operations of an SVM and volume

GET `/storage/snaplock/file-fingerprints`

Introduced In: 9.7

Retrieves a list of all the fingerprint operations of the specified SVM and volume.

Related ONTAP commands

- `volume file fingerprint show`

Example

```
GET "/api/storage/snaplock/file-fingerprints/?svm.uuid=23940494-3f3a-11e9-
8675-0050568e8f89&volume.uuid=36cdb58c-3f3a-11e9-8675-0050568e8f89"
```

Learn more

- DOC /storage/snaplock/file-fingerprints

Parameters

Name	Type	In	Required	Description
svm.uuid	string	query	True	SVM UUID
volume.uuid	string	query	True	Volume UUID
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records.
records	array[snaplock_file_fingerprint_get]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 17039367,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090442	Invalid Vserver UUID
14090445	Invalid key values. Provide Vserver UUID and Volume UUID

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_file_fingerprint_get

Name	Type	Description
_links	_links	
id	integer	A unique identifier for the fingerprint operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a fingerprint computation session

POST `/storage/snaplock/file-fingerprints`

Introduced In: 9.7

Creates a fingerprint computation session on the file and returns a session-id. This session-id is a unique identifier that you can use to retrieve the progress of an ongoing fingerprint operation. When the operation is complete, you can use the session-id to retrieve the complete fingerprint output for the file .

Required properties

- `svm.uuid` or `svm.name` - Name or UUID of the SVM.
- `volume.name` or `volume.uuid` - Name or UUID of the volume.
- `path` - Path of the file.

Default property values

If not specified in POST, the follow default property values are assigned:

- `algorithm` - *sha256*

Related ONTAP commands

- `volume file fingerprint start`

Example

```
POST "/api/storage/snaplock/file-fingerprints" '{"svm":{"uuid":"23940494-
3f3a-11e9-8675-0050568e8f89"},"volume": {"uuid":"26cdb58c-3f3a-11e9-8675-
0050568e8f89"},"path":"/vol/a1.txt","algorithm":"md5"}'
```

Learn more

- DOC /storage/snaplock/file-fingerprints

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
algorithm	string	The digest algorithm which is used for the fingerprint computation
data_fingerprint	string	The digest value of data of the file. The fingerprint is base64 encoded. This field is not included if the scope is metadata-only.
file_size	integer	The size of the file in bytes.
file_type	string	The type of the file.
id	integer	A unique identifier for the fingerprint operation
metadata_fingerprint	string	The digest value of metadata of the file. The metadata fingerprint is calculated for file size, file ctime, file mtime, file crtime, file retention time, file uid, file gid, and file type. The fingerprint is base64 encoded. This field is not included if the scope is data-only.
path	string	Specifies the path on which file fingerprint operation is running or has completed. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
scope	string	The scope of the file which is used for the fingerprint computation
state	string	Specifies the status of fingerprint operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example request

```
{
  "algorithm": "sha256",
  "data_fingerprint": "MOFJVevxNSJm3C/4Bn5oEEYH51CrudOzZYK4r5Cfy1g=",
  "file_size": 1048576,
  "file_type": "worm",
  "id": 17039367,
  "metadata_fingerprint":
"8iMjqJXiNcqgXT5XuRhLiEwIrJEihDmwS0hrexnjgmc=",
  "path": "/homedir/dir1",
  "scope": "data_only",
  "state": "completed",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
2	An invalid value was entered for one of the fields
2621519	Invalid SVM name format

Error code	Description
14090347	Invalid path format
14090443	Invalid volume name
14090444	Invalid Vserver name
14090447	Invalid volume UUID
14090448	Invalid key values. Provide valid Vserver name and volume name or Vserver UUID and volume UUID

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_file_fingerprint

Name	Type	Description
algorithm	string	The digest algorithm which is used for the fingerprint computation

Name	Type	Description
data_fingerprint	string	The digest value of data of the file. The fingerprint is base64 encoded. This field is not included if the scope is metadata-only.
file_size	integer	The size of the file in bytes.
file_type	string	The type of the file.
id	integer	A unique identifier for the fingerprint operation
metadata_fingerprint	string	The digest value of metadata of the file. The metadata fingerprint is calculated for file size, file ctime, file mtime, file crtime, file retention time, file uid, file gid, and file type. The fingerprint is base64 encoded. This field is not included if the scope is data-only.
path	string	Specifies the path on which file fingerprint operation is running or has completed. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
scope	string	The scope of the file which is used for the fingerprint computation
state	string	Specifies the status of fingerprint operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Cancel a fingerprint operation

DELETE `/storage/snaplock/file-fingerprints/{id}`

Introduced In: 9.7

Aborts an in-progress fingerprint operation. This API takes session-id as input and aborts the fingerprint operation that is associated with the specified session-id.

Related ONTAP commands

- `volume file fingerprint abort`

Learn more

- DOC /storage/snaplock/file-fingerprints

Parameters

Name	Type	In	Required	Description
id	string	path	True	Unique identifier of the operation

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090440	File fingerprint operation has completed
14090446	Invalid session ID

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the file fingerprint information for a specific session ID

GET `/storage/snaplock/file-fingerprints/{id}`

Introduced In: 9.7

Retrieves the file fingerprint information for a specific session ID.

Related ONTAP commands

- `volume file fingerprint dump`

Learn more

- DOC /storage/snaplock/file-fingerprints

Parameters

Name	Type	In	Required	Description
id	string	path	True	Unique identifier of the operation
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
algorithm	string	The digest algorithm which is used for the fingerprint computation
data_fingerprint	string	The digest value of data of the file. The fingerprint is base64 encoded. This field is not included if the scope is metadata-only.
file_size	integer	The size of the file in bytes.
file_type	string	The type of the file.
id	integer	A unique identifier for the fingerprint operation
metadata_fingerprint	string	The digest value of metadata of the file. The metadata fingerprint is calculated for file size, file ctime, file mtime, file crtime, file retention time, file uid, file gid, and file type. The fingerprint is base64 encoded. This field is not included if the scope is data-only.
path	string	Specifies the path on which file fingerprint operation is running or has completed. Specifies the path relative to the output volume root, of the form "/path". The path can be path to a file or a directory.
scope	string	The scope of the file which is used for the fingerprint computation
state	string	Specifies the status of fingerprint operation.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "algorithm": "sha256",
  "data_fingerprint": "MOFJVevxNSJm3C/4Bn5oEEYH51CrudOzZYK4r5Cfy1g=",
  "file_size": 1048576,
  "file_type": "worm",
  "id": 17039367,
  "metadata_fingerprint":
"8iMjqJXiNcqgXT5XuRhLiEwIrJEihDmwS0hrexnjgmc=",
  "path": "/homedir/dir1",
  "scope": "data_only",
  "state": "completed",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
14090441	Invalid key values. Provide session ID or Vserver UUID and volume UUID
14090449	File fingerprint operation has not completed

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SnapLock file retention time

Storage SnapLock file volume.uuid path endpoint overview

This API manages the SnapLock retention time of a file. You can perform a privileged-delete operation by executing this API.

Examples

1. Sets the SnapLock retention time of a file:

```
 PATCH "/api/storage/snaplock/file/000dc5fd-4175-11e9-b937-
0050568e3f82/%2Ffile2.txt" '{"expiry_time": "2030-02-14T18:30:00+5:30"}'
```

1. Extends the retention time of a WORM file:

```
 PATCH "/api/storage/snaplock/file/000dc5fd-4175-11e9-b937-
0050568e3f82/%2Ffile2.txt" '{"expiry_time": "infinite"}'
```

1. Extends the retention time of a WORM file:

```
 PATCH "/api/storage/snaplock/file/000dc5fd-4175-11e9-b937-
0050568e3f82/%2Ffile2.txt" '{"retention_period": "P1M"}'
```

1. Extends the retention time of a WORM file:

```
 PATCH "/api/storage/snaplock/file/000dc5fd-4175-11e9-b937-
0050568e3f82/%2Ffile2.txt" '{"retention_period": "infinite"}'
```

Delete unexpired WORM files of a SnapLock enterprise volume

DELETE `/storage/snaplock/file/{volume.uuid}/{path}`

Introduced In: 9.7

Deletes unexpired WORM files of a SnapLock Enterprise volume. This is a privileged-delete operation. The only built-in role that has access to the command is vsadmin-snaplock.

Related ONTAP commands

- `volume file privileged-delete`

Learn more

- DOC /storage/snaplock/file/{volume.uuid}/{path}

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	Path of the file in the form "/<dirpath>/<filename>" </filename></dirpath>

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
262179	Unexpected argument "<file_name>\"</file_name>
6691623	User is not authorized
13763162	SnapLock audit log volume is not configured for the SVM
13763280	Only a user with the security login role "vsadmin-snaplock" is allowed to perform this operation
14090347	File path must be in the format "\/<dir>\/<file path>"
917804	Path should be given in the format "\/\vol\/<volume name>\/<file path>".

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SnapLock retention details of a file

GET `/storage/snaplock/file/{volume.uuid}/{path}`

Introduced In: 9.7

Retrieves the SnapLock retention details of the specified file. An indefinite expiry time indicates the file is under a Legal-Hold.

Related ONTAP commands

- `volume file retention show`

Learn more

- DOC /storage/snaplock/file/{volume.uuid}/{path}

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	Path of the file in the form "/<dirpath>/<filename>" </filename></dirpath>
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
expiry_time	string	Expiry time of the file in date-time format, "infinite", "indefinite", or "unspecified". An "infinite" retention time indicates that the file will be retained forever. An "unspecified" retention time indicates that the file will be retained forever; however, the retention time of the file can be changed to an absolute value. An "indefinite" retention time indicates that the file is under Legal-Hold.

Name	Type	Description
file_path	string	Specifies the volume relative path of the file
is_expired	boolean	This indicates if the file is under active retention or if the file is past its expiry time.
seconds_until_expiry	integer	Specifies the number of seconds until the expiration time of the file.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "expiry_time": "2058-06-04 15:00:00 -0400",
  "file_path": "/dir1/file",
  "is_expired": 1,
  "seconds_until_expiry": 168,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
262179	Unexpected argument "<file_name>\"</file_name>
917864	Operation not supported
6691623	User is not authorized

Error code	Description
13762592	Operation not supported on non-SnapLock volume
14090347	File path must be in the format "\/<dir>\/<file path>"
917804	Path should be given in the format "\/\vol\/<volume name>\/<file path>".

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the SnapLock retention time of a file

PATCH `/storage/snaplock/file/{volume.uuid}/{path}`

Introduced In: 9.7

Updates the SnapLock retention time of a file or extends the retention time of a WORM file. Input parameters "expiry_time" or "retention_period" can be used to set or extend the retention time of file. Both "expiry_time" and "retention_period" parameters expect the date in ISO 8601 format. Additionally, the "expiry_time" parameter can also be set to "infinite" or "unspecified" and the "retention_period" parameter can also be set to "infinite". The input parameters are mutually exclusive.

Related ONTAP commands

- `volume file retention set`

Learn more

- DOC /storage/snaplock/file/{volume.uuid}/{path}

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID

Name	Type	In	Required	Description
path	string	path	True	Path of the file in the form "/<dirpath>/<filename>" </filename></dirpath>

Request Body

Name	Type	Description
expiry_time	string	Expiry time of the file in date-time format, "infinite", "indefinite", or "unspecified". An "infinite" retention time indicates that the file will be retained forever. An "unspecified" retention time indicates that the file will be retained forever; however, the retention time of the file can be changed to an absolute value. An "indefinite" retention time indicates that the file is under Legal-Hold.
is_expired	boolean	This indicates if the file is under active retention or if the file is past its expiry time.
retention_period	string	Duration of retention time file to be locked with, An "infinite" retention period indicates that the file will be retained forever.
seconds_until_expiry	integer	Specifies the number of seconds until the expiration time of the file.

Example request

```
{
  "expiry_time": "2058-06-04 15:00:00 -0400",
  "is_expired": 1,
  "retention_period": "P2M",
  "seconds_until_expiry": 168
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
262179	Unexpected argument "<file_name>\"</file_name>
262186	Field "expiry_time" cannot be used with field "retention_period"
6691623	User is not authorized
13763279	The resulting expiry time due to the specified retention period is earlier than the current expiry time
14090348	Invalid Expiry time
14090347	File path must be in the format "\/<dir>\/<file path>"
917804	Path should be given in the format "\/\vol\/<volume name>\/<file path>".

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_file_retention

Name	Type	Description
expiry_time	string	Expiry time of the file in date-time format, "infinite", "indefinite", or "unspecified". An "infinite" retention time indicates that the file will be retained forever. An "unspecified" retention time indicates that the file will be retained forever; however, the retention time of the file can be changed to an absolute value. An "indefinite" retention time indicates that the file is under Legal-Hold.
is_expired	boolean	This indicates if the file is under active retention or if the file is past its expiry time.
retention_period	string	Duration of retention time file to be locked with, An "infinite" retention period indicates that the file will be retained forever.
seconds_until_expiry	integer	Specifies the number of seconds until the expiration time of the file.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SnapLock storage litigations

Storage SnapLock litigations endpoint overview

Use this API to retain Compliance-mode WORM files for the duration of a litigation. A file under a legal-hold behaves as a WORM file with an indefinite retention period. Litigation ID is a combination of volume UUID and litigation name in the format `<volume UUID>:<litigation name>`. Only a user with the security login role vsadmin-snaplock can perform the operation.

Retrieve litigations under an SVM

GET `/storage/snaplock/litigations`

Introduced In: 9.7

Retrieves the list of litigations under an SVM.

Related ONTAP commands

- `snaplock legal-hold show`

Learn more

- DOC /storage/snaplock/litigations

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of Records
records	array[snaplock_litigation_get]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": "string",
      "name": "lit1",
      "operations": [
        {
          "id": 16842759
        }
      ],
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090346	Internal Error. Wait a few minutes, then try the command again
14090343	Invalid field

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

operations

Name	Type	Description
id	integer	Operation ID.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_litigation_get

Name	Type	Description
_links	_links	
id	string	Specifies the litigation ID.
name	string	Specifies the legal-hold litigation name.
operations	array[operations]	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Start a legal-hold operation

POST `/storage/snaplock/litigations`

Introduced In: 9.7

Starts a Legal-Hold.

Required properties

- `path` - Path of the file.
- `name` - Litigation name.
- `volume.name` or `volume.uuid` - Name or UUID of the volume.

Related ONTAP commands

- `snaplock legal-hold begin`

Example

```
POST "/api/storage/snaplock/litigations"
'{"volume.name":"SLC1","name":"l3","path":"/b.txt"}'
```

Learn more

- DOC /storage/snaplock/litigations

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
id	string	Specifies the litigation ID.
name	string	Specifies the legal-hold litigation name.
operations	array[snaplock_legal_hold_operation]	
path	string	Specifies the path on which legal-hold operation has to be applied.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example request

```
{
  "id": "string",
  "name": "lit1",
  "operations": [
    {
      "id": 16842759,
      "num_files_failed": 0,
      "num_files_processed": 30,
      "num_files_skipped": 10,
      "num_inodes_ignored": 10,
      "path": "/dir1",
      "state": "completed",
      "type": "begin"
    }
  ],
  "path": "/dir1",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13762586	Volume is not a SnapLock Compliance volume
13763162	Audit logging is not configured for the SVM
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090346	Internal Error. Wait a few minutes, then try the command again
14090340	{field} is a required field
14090343	Invalid Field
14090641	The specified volume.name and volume.uuid refer to different volumes

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

snaplock_legal_hold_operation

Name	Type	Description
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.
type	string	Specifies the type of legal-hold operation.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snaplock_litigation

Name	Type	Description
id	string	Specifies the litigation ID.
name	string	Specifies the legal-hold litigation name.
operations	array[snaplock_legal_hold_operation]	
path	string	Specifies the path on which legal-hold operation has to be applied.
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a legal-hold end on all of the files for a litigation ID

DELETE `/storage/snaplock/litigations/{id}`

Introduced In: 9.7

Creates a legal-hold end on all of the files for the specified litigation ID. This is only allowed when an operation is no longer in progress.

Related ONTAP commands

- `snaplock legal-hold end`

Example

```
DELETE "/api/storage/snaplock/litigations/fd72e138-4bc3-11e9-a85f-
0050568eb48f%3Al3"
```

Learn more

- DOC /storage/snaplock/litigations

Parameters

Name	Type	In	Required	Description
id	string	path	True	Litigation ID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090343	Invalid Field
14090346	Internal Error. Wait a few minutes, then try the command again
14090642	Legal-Hold operation is in progress. Legal-Hold end cannot be performed. Wait for the operation to complete or abort the operation

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve ongoing operations for a litigation ID

GET `/storage/snaplock/litigations/{id}`

Introduced In: 9.7

Retrieves the list of ongoing operations for the specified litigation ID.

Related ONTAP commands

- `snaplock legal-hold show`

Learn more

- DOC /storage/snaplock/litigations

Parameters

Name	Type	In	Required	Description
id	string	path	True	Litigation ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
id	string	Specifies the litigation ID.
name	string	Specifies the legal-hold litigation name.
operations	array[snaplock_legal_hold_operation]	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "id": "string",
  "name": "lit1",
  "operations": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 16842759,
      "num_files_failed": 0,
      "num_files_processed": 30,
      "num_files_skipped": 10,
      "num_inodes_ignored": 10,
      "path": "/dir1",
      "state": "completed",
      "type": "begin"
    }
  ],
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090346	Internal Error. Wait a few minutes, then try the command again
14090343	Invalid Field

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

snaplock_legal_hold_operation

Name	Type	Description
_links	_links	
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.
type	string	Specifies the type of legal-hold operation.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View litigation ID files

Storage SnapLock litigations litigation.id files endpoint overview

Displays the list of files under the specified litigation ID.

Display files for a litigation ID

GET `/storage/snaplock/litigations/{litigation.id}/files`

Introduced In: 9.7

Displays the list of files for the specified litigation ID.

Parameters

Name	Type	In	Required	Description
litigation.id	string	path	True	Litigation ID
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	List of Files under the specified litigation.

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "file": [
        "string"
      ]
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

records

Name	Type	Description
file	array[string]	Name of the file including the path from the root.
sequence_index	integer	Sequence index of files path list.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage legal-hold operations

Storage SnapLock litigations litigation.id operations endpoint overview

Manages the legal-hold operations for the specified litigation ID.

Examples

1. Adds a Legal-Hold.

```
 POST "/api/storage/snaplock/litigations/f8a67b60-4461-11e9-b327-
0050568ebef5:l1/operations" '{"type" : "begin", "path" : "/a.txt"}'
```

1. Removes a Legal-Hold.

```
 POST "/api/storage/snaplock/litigations/f8a67b60-4461-11e9-b327-
0050568ebef5:l1/operations" '{"type" : "end", "path" : "/a.txt"}'
```

Create or remove litigations for a path

POST `/storage/snaplock/litigations/{litigation.id}/operations`

Introduced In: 9.7

Creates or removes litigations for the specified path.

Required properties

- `type` - Legal-Hold operation type.
- `path` - Litigation path.

Related ONTAP commands

- `snaplock legal-hold begin`
- `snaplock legal-hold end`

Learn more

- DOC /storage/snaplock/litigations/{litigation.id}/operations

Parameters

Name	Type	In	Required	Description
litigation.id	string	path	True	Litigation ID

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.
type	string	Specifies the type of legal-hold operation.

Example request

```
{
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 30,
  "num_files_skipped": 10,
  "num_inodes_ignored": 10,
  "path": "/dir1",
  "state": "completed",
  "type": "begin"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.

Name	Type	Description
type	string	Specifies the type of legal-hold operation.

Example response

```
{
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 30,
  "num_files_skipped": 10,
  "num_inodes_ignored": 10,
  "path": "/dir1",
  "state": "completed",
  "type": "begin"
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090343	Invalid Field
14090346	Internal Error. Wait a few minutes, then try the command again

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

snaplock_legal_hold_operation

Name	Type	Description
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.
type	string	Specifies the type of legal-hold operation.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Cancel the ongoing legal-hold operation

DELETE `/storage/snaplock/litigations/{litigation.id}/operations/{id}`

Introduced In: 9.7

Aborts the ongoing legal-hold operation. An abort does not rollback any changes already made. You must re-run begin or end for cleanup.

Related ONTAP commands

- `snaplock legal-hold abort`

Example

```
DELETE "/api/storage/snaplock/litigations/f8a67b60-4461-11e9-b327-
0050568ebef5:l1/operations/16908292"
```

Learn more

- DOC /storage/snaplock/litigations/{litigation.id}/operations

Parameters

Name	Type	In	Required	Description
litigation.id	string	path	True	Litigation ID
id	string	path	True	Operation ID.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
13763378	SnapLock legal-hold operation for this operation ID does not exist
14090346	Internal Error. Wait a few minutes, then try the command again
14090541	A completed or failed operation cannot be aborted

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the status of legal-hold for an operation ID

GET `/storage/snaplock/litigations/{litigation.id}/operations/{id}`

Introduced In: 9.7

Retrieves the status of legal-hold for the specified operation ID.

Related ONTAP commands

- `snaplock legal-hold show`

Learn more

- DOC /storage/snaplock/litigations/{litigation.id}/operations

Parameters

Name	Type	In	Required	Description
litigation.id	string	path	True	Litigation ID
id	string	path	True	Operation ID.

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
id	integer	Operation ID.
num_files_failed	string	Specifies the number of files on which legal-hold operation failed.
num_files_processed	string	Specifies the number of files on which legal-hold operation was successful.
num_files_skipped	string	Specifies the number of files on which legal-hold begin operation was skipped. The legal-hold begin operation is skipped on a file if it is already under hold for a given litigation.
num_inodes_ignored	string	Specifies the number of inodes on which the legal-hold operation was not attempted because they were not regular files.
path	string	Specifies the path on which legal-hold operation is applied.
state	string	Specifies the status of legal-hold operation.
type	string	Specifies the type of legal-hold operation.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "id": 16842759,
  "num_files_failed": 0,
  "num_files_processed": 30,
  "num_files_skipped": 10,
  "num_inodes_ignored": 10,
  "path": "/dir1",
  "state": "completed",
  "type": "begin"
}
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13763280	Only a user with security login role "vsadmin-snaplock" is allowed to perform this operation.
14090343	Invalid Field
14090346	Internal Error. Wait a few minutes, then try the command again

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

SnapMirror

SnapMirror overview

Overview

SnapMirror technology enables customers to copy and backup their production data. The secondary or destination volume in such a backup relationship can reside anywhere, locally or remotely, and can be used to restore access to the protected data. You can restore access to protected data by drawing upon a vault of backups or, in the event that a primary is unusable, by using a disaster recovery copy that can be activated for clients and applications. SnapMirror periodically updates a replica to create new backups and/or to keep a replica up-to-date with changes that have been written to the primary. The SnapMirror subsystems are designed to keep many pairs of source (primary) and destination (secondary) copies up-to-date in an efficient and scalable manner.

The SnapMirror APIs can be used to create and manage SnapMirror relationships of type "async", and "sync". These APIs can also be used to manage restore-relationships. These APIs allow you to manage the following endpoints:

- SnapMirror policies - When applied to a SnapMirror relationship, the SnapMirror policy controls the behavior of the relationship and specifies the configuration attributes for that relationship.
- SnapMirror relationships - You can create and manage SnapMirror relationships, and you can change the state of the SnapMirror relationship using a PATCH request.
- SnapMirror transfers - You can manage data transfers on the specified SnapMirror relationship.

Manage SnapMirror policies

SnapMirror policies endpoint overview

Managing SnapMirror policies

This API is used to manage SnapMirror policies of type "async" and "sync". When applied to a SnapMirror relationship, the SnapMirror policy controls the behavior of the relationship and specifies the configuration attributes for that relationship.
The policy type "async" can be associated with a SnapMirror relationship that has either a FlexVol volume, FlexGroup volume, or SVM as the endpoint.
The policy type "sync" can be associated with a SnapMirror relationship that has a FlexVol volume or a consistency group as the endpoint. The policy type "sync" can have a "sync_type" of either "sync", "strict_sync", "automated_failover" or "automated_failover_duplex". If the "sync_type" is "sync", a write success is returned to the client after writing the data to the primary endpoint and before writing the data to the secondary endpoint. If the "sync_type" is "strict_sync", a write success is returned to the client after writing the data to both primary and secondary endpoints.
A "sync_type" of "automated_failover" can be associated with a SnapMirror relationship that has a consistency group as the endpoint and provides asymmetric active active access to the two storage copies.

A "sync_type" of "automated_failover_duplex" can be associated with a SnapMirror relationship that has a consistency group as the endpoint and provides symmetric active active access to the two storage copies.

Mapping of SnapMirror policies from CLI to REST

CLI	REST
mirror-vault	async
async-mirror w/	async w/
all_source_snapshots	copy_all_source_snapshots
async-mirror w/o	async w/
all_source_snapshots	copy_latest_source_snapshot
vault	async w/
	create_snapshot_on_source

		sync_type
		----------
sync-mirror	sync	sync
strict-sync-mirror	sync	strict_sync
automated-failover	sync	automated_failover

|automated-failover-duplex | sync | automated_failover_duplex |
| | |

Retrieve SnapMirror async and sync policy types

GET `/snapmirror/policies`

Introduced In: 9.6

Retrieves SnapMirror policies of type "async" and "sync".

Related ONTAP commands

- `snapmirror policy show`

Example

The following example shows how to retrieve a collection of SnapMirror policies.

```
GET "/api/snapmirror/policies"
```

Learn more

- DOC /snapmirror/policies

Parameters

Name	Type	In	Required	Description
create_snapshot_on_source	boolean	query	False	Filter by create_snapshot_on_source • Introduced in: 9.11
copy_latest_source_snapshot	boolean	query	False	Filter by copy_latest_source_snapshot • Introduced in: 9.11
identity_preservation	string	query	False	Filter by identity_preservation
retention.warn	integer	query	False	Filter by retention.warn • Introduced in: 9.13

Name	Type	In	Required	Description
retention.creation_schedule.uuid	string	query	False	Filter by retention.creation_schedule.uuid
retention.creation_schedule.name	string	query	False	Filter by retention.creation_schedule.name
retention.label	string	query	False	Filter by retention.label
retention.period	string	query	False	Filter by retention.period • Introduced in: 9.11
retention.prefix	string	query	False	Filter by retention.prefix
retention.preserve	boolean	query	False	Filter by retention.preserve • Introduced in: 9.13
retention.count	integer	query	False	Filter by retention.count
sync_common_snapshot_schedule.uuid	string	query	False	Filter by sync_common_snapshot_schedule.uuid
sync_common_snapshot_schedule.name	string	query	False	Filter by sync_common_snapshot_schedule.name
network_compression_enabled	boolean	query	False	Filter by network_compression_enabled
comment	string	query	False	Filter by comment
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
rpo	integer	query	False	Filter by rpo • Introduced in: 9.10
uuid	string	query	False	Filter by uuid
throttle	integer	query	False	Filter by throttle
transfer_schedule.uuid	string	query	False	Filter by transfer_schedule.uuid
transfer_schedule.name	string	query	False	Filter by transfer_schedule.name
name	string	query	False	Filter by name
scope	string	query	False	Filter by scope
sync_type	string	query	False	Filter by sync_type
copy_all_source_snapshots	boolean	query	False	Filter by copy_all_source_snapshots • Introduced in: 9.10
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snapmirror_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "copy_all_source_snapshots": 1,
      "copy_latest_source_snapshot": 1,
      "create_snapshot_on_source": "",
      "identity_preservation": "string",
      "name": "Asynchronous",
      "retention": [
        {
          "count": 7,
          "creation_schedule": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "weekly",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "label": "hourly",
          "period": "P30D",
          "prefix": "string",
          "preserve": 1,
          "warn": 4
        }
      ],
      "rpo": 0,
      "scope": "string",
```

```
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "sync_common_snapshot_schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "sync_type": "string",
      "throttle": 0,
      "transfer_schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "type": "string",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303842	SnapMirror policy is not supported.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

creation_schedule

Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy_rule

SnapMirror policy rule for retention.

Name	Type	Description
count	integer	Number of snapshots to be kept for retention. Maximum value will differ based on type of relationship and scaling factor.
creation_schedule	creation_schedule	Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.

Name	Type	Description
label	string	Snapshot label
period	string	Specifies the duration for which the snapshots are locked. The retention period value represents a duration and must be in the ISO-8601 duration format. Years, months, days, hours, minutes, and seconds are represented as "P<num>Y","P<num>M","P<num>D","PT<num>H","PT<num>M" and "PT<num>S". Value "infinite" is also a valid input for Flexvol volumes and FlexGroup volumes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. The range of supported retention period values is between 1 second to infinite.</num></num></num></num></num></num>
prefix	string	Specifies the prefix for the snapshot name to be created as per the schedule. If no value is specified, then the label is used as the prefix.
preserve	boolean	Specifies the behavior when the snapshot retention count is reached on the SnapMirror destination for the rule. The default value is false, which means that the oldest snapshot is deleted to make room for new ones but only if the number of snapshots has exceeded the retention count specified in the 'count' property. When set to true and where the snapshots have reached the retention count, an incremental SnapMirror transfer will fail or if the rule has a schedule, snapshots will be no longer be created on the SnapMirror destination.

Name	Type	Description
warn	integer	Specifies the warning threshold count for the rule. The default value is zero. When set to a value greater than zero, an event is generated after the number of snapshots (for the particular rule) retained on a SnapMirror destination reaches the specified warning limit. The preserve property for the rule must be true in order to set the warn property to a value greater than zero.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

sync_common_snapshot_schedule

Schedule used to create common snapshots for synchronous relationships.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

transfer_schedule

The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy

SnapMirror policy information. SnapMirror policy can either be of type "async", "sync" or "continuous". The policy type "async" can be associated with a SnapMirror relationship that has either a FlexVol volume, FlexGroup volume or SVM as the endpoint.
The policy type "sync" along with "sync_type" as "sync" or "strict_sync" can be associated with a SnapMirror relationship that has a FlexVol volume as the endpoint. The policy type "sync" can have a "sync_type" of either "sync", "strict_sync", "automated_failover" or "automated_failover_duplex". If the "sync_type" is "sync", a write success is returned to the client after writing the data to the source endpoint and before writing the data to the destination endpoint. If the "sync_type" is "strict_sync", a write success is returned to the client after writing the data to both source and destination endpoints.
If the "sync_type" is "automated_failover", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides asymmetric active active access to the two storage copies. If the "sync_type" is "automated_failover_duplex", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides symmetric active active access to the two storage copies. Use the "sync" policy with "sync_type" as "automated_failover" or "automated_failover_duplex" to establish SnapMirror active sync relationships for business continuity use cases. SnapMirror relationships with policy types as "sync" and "sync_type" as "automated_failover" or "automated_failover_duplex" can be monitored by the Mediator, if configured. If the source Consistency Group endpoint is not reachable, the Mediator might trigger a failover to the destination consistency group endpoint.
A policy type of "continuous" can be associated with SnapMirror relationships that have either ONTAP S3 buckets or non-ONTAP object stores as endpoints. This type of policy is used for FabricLink owned targets.

Name	Type	Description
_links	_links	
comment	string	Comment associated with the policy.
copy_all_source_snapshots	boolean	Specifies that all the source snapshots (including the one created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.

Name	Type	Description
copy_latest_source_snapshot	boolean	Specifies that the latest source snapshot (created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.
create_snapshot_on_source	boolean	Specifies whether a new snapshot should be created on the source at the beginning of an update or resync operation. This is applicable only to async policies. Property can only be set to 'false'.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.
name	string	Name of the policy.
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
sync_type	string	
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a SnapMirror policy

POST `/snapmirror/policies`

Introduced In: 9.6

Creates a SnapMirror policy. The property "identity_preservation" is applicable to only SnapMirror relationships with SVM endpoints and it indicates which configuration of the source SVM is replicated to the destination SVM.

It takes the following values:

- `full` - indicates that the source SVM configuration is replicated to the destination SVM endpoint.
- `exclude_network_config` - indicates that the source SVM configuration other than network configuration is replicated to the destination SVM endpoint.
- `exclude_network_and_protocol_config` - indicates that the source SVM configuration is not replicated to the destination SVM endpoint.

Important notes

- The property "identity_preservation" is applicable to only SnapMirror relationships with SVM endpoints and it indicates which configuration of the source SVM is replicated to the destination SVM.
- The properties "identity_preservation" and "transfer_schedule" are not applicable for "sync" type policies.
- The properties "copy_all_source_snapshots", "copy_latest_source_snapshot", and "create_snapshot_on_source" are mutually exclusive.
- The properties "copy_all_source_snapshots", "copy_latest_source_snapshot", and "create_snapshot_on_source" are not applicable for "sync" type policies.
- No "retention" properties can be specified if "copy_all_source_snapshots" or 'copy_latest_source_snapshot' is specified.
- The properties "retention.creation_schedule" and "retention.prefix" are not applicable for "sync" type policies.
- The property "retention.creation_schedule" is not applicable for "async" policies with "create_snapshot_on_source" set to "false".
- The property "sync_common_snapshot_schedule" is not applicable for an "async" type policy.
- The property "retention.count" specifies the maximum number of snapshots that are retained on the SnapMirror destination volume.
- When the property "retention.label" is specified, the snapshots that have a SnapMirror label matching this property is transferred to the SnapMirror destination.
- When the property "retention.creation_schedule" is specified, snapshots are directly created on the SnapMirror destination. The snapshots created have the same content as the latest snapshot already present on the SnapMirror destination.
- The property "transfer_schedule" cannot be set to null (no-quotes) during SnapMirror policy POST.
- The properties "retention.label" and "retention.count" must be specified for "async" policies with "create_snapshot_on_source" set to "false".
- The property "retention.warn" is not supported for a policy when the "retention.preserve" property is false.
- The property "retention.warn" value must be less than the property "retention.count" value for a rule in a policy.

Required properties

- `name` - Name of the new SnapMirror policy.

Recommended optional properties

- `svm.name` or `svm.uuid` - Name or UUID of the SVM that owns the SnapMirror policy.

Default property values

If not specified in POST, the following default property values are assigned:

- `type` - *async*
- `sync_type` - *sync* (when `type` is *sync*)
- `network_compression_enabled` - *false*
- `throttle` - *0*
- `identity_preservation` - *`exclude_network_and_protocol_config`*

Related ONTAP commands

- `snapmirror policy create`

Examples

Creating a SnapMirror policy of type "sync"

```
 POST "/api/snapmirror/policies/" '{"name": "policy1", "svm.name": "VS0",
"type": "sync", "sync_type": "sync"}'
```

Creating a SnapMirror policy of type "async" with two sets of retention values, one with a creation_schedule

```
 POST "/api/snapmirror/policies" '{"name": "policy_ret", "svm": {"name":
"vs1"}, "retention": [{"label": "weekly", "count": "2",
"creation_schedule": {"name": "weekly"}}, {"label":"daily",
"count":"7"}]}'
```

Creating a SnapMirror policy of type "async"

```
 POST "/api/snapmirror/policies" '{"name": "newPolicy", "svm":{"name" :
"vs1"}, "type": "async"}'
```

Creating a SnapMirror policy of type "async" which replicates all snapshots

```
 POST "/api/snapmirror/policies" '{"name": "newPolicy", "svm":{"name" :
"vs1"}, "type": "async", "copy_all_source_snapshots": "true"}'
```

Creating a SnapMirror policy of type "async" which replicates latest snapshot

```
 POST "/api/snapmirror/policies" '{"name": "newPolicy2", "svm":{"name" :
"vs1"}, "type": "async", "copy_latest_source_snapshot": "true"}'
```

Creating a SnapMirror policy of type "async" which does not create snapshots on source

```
 POST "/api/snapmirror/policies" '{"name": "newPolicy", "svm":{"name" :
"vs1"}, "type": "async", "create_snapshot_on_source": "false",
"retention": [{"label": "daily", "count": 7}]}'
```

Creating a SnapMirror policy of type "sync" with sync_type as "automated_failover"

```
 POST "/api/snapmirror/policies/" '{"name": "policy1", "svm.name": "VS0",
"type": "sync", "sync_type": "automated_failover" }'
```

Creating a SnapMirror policy of type "sync" with sync_type as "automated_failover_duplex"

```
 POST "/api/snapmirror/policies/" '{"name": "policy_afd", "svm.name":
"VS0", "type": "sync", "sync_type": "automated_failover_duplex" }'
```

Creating a SnapMirror policy of type "async" with two sets of retention values and retention periods

```
 POST "/api/snapmirror/policies" '{"name": "policy_ret", "svm": {"name":
"vs1"}, "retention": [{"label": "weekly", "count": "2", "period": "P7D"},
{"label":"daily", "count":"7", "period": "PT3H"}]}'
```

Creating a SnapMirror policy of type "async" with retention value as "infinite"

```
 POST "/api/snapmirror/policies" '{"name": "policy_ret", "svm": {"name":
"vs1"}, "retention": [{"label": "weekly", "count": "5", "period":
"infinite"}]}'
```

Creating a SnapMirror policy of type "async" with properties retention preserve as true and retention warn as 3.

```
 POST "/api/snapmirror/policies" '{"name": "policy_ret", "svm": {"name":
"vs1"}, "retention": [{"label": "weekly", "count": "5", "preserve": true,
"warn": 3}]}'
```

Learn more

- DOC /snapmirror/policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
comment	string	Comment associated with the policy.

Name	Type	Description
copy_all_source_snapshots	boolean	Specifies that all the source snapshots (including the one created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.
copy_latest_source_snapshot	boolean	Specifies that the latest source snapshot (created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.
create_snapshot_on_source	boolean	Specifies whether a new snapshot should be created on the source at the beginning of an update or resync operation. This is applicable only to async policies. Property can only be set to 'false'.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.
name	string	Name of the policy.
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.

Name	Type	Description
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
sync_type	string	
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

Example request

```
{
  "comment": "string",
  "copy_all_source_snapshots": 1,
  "copy_latest_source_snapshot": 1,
  "create_snapshot_on_source": "",
  "identity_preservation": "string",
  "name": "Asynchronous",
  "retention": [
    {
      "count": 7,
      "creation_schedule": {
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "label": "hourly",
      "period": "P30D",
      "prefix": "string",
      "preserve": 1,
      "warn": 4
    }
  ],
  "rpo": 0,
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "sync_common_snapshot_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "sync_type": "string",
  "throttle": 0,
  "transfer_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "type": "string",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
6619714	Schedule specified is an interval schedule. SnapMirror does not support interval schedules.
13304126	Enter a value for "count" in the range indicated in the error message.
13303887	Failed to create SnapMirror policy. Reason: Maximum number of allowed retention rules reached
13304083	The specified property is not supported because all nodes in the cluster are not capable of supporting this property.

Error code	Description
13304084	Properties specified are mutually exclusive. Provide only one property.
13304085	The specified property does not support the specified value.
13304092	Input value of the retention period property is invalid. For relationships with FlexVol volume or FlexGroup volume destinations, the duration must be in ISO 6801 format or can be infinite. For relationships with object store destinations, only duration values with Y, M or D and supported and must be in the specified range.

| 6621045 | The property retention.warn is not supported for a policy when the retention.preserve property is false.
| 13304129 | The property retention.warn value must be less than the property retention.count value for a rule in a policy.
| 13304130 | The total retention.count value for all rules in a policy cannot exceed the value indicated in the error message.
6621060	Failed to create specified policy. Reason: A policy with this name already exists.
13304118	The specified properties cannot be both set at the same time: retention.creation_schedule and retention.period
6621972	Schedule specified is not supported by SnapMirror Synchronous. The allowed time interval for the creation of common snapshots can range between 30 minutes and 24 hours.
13304011	Failed to create or modify the specified SnapMirror policy. Reason: The property retention.count cannot have a value greater than 1.
6621091	The specified SnapMirror policy cannot have a rule with a preserve value of true.
6621088	The specified SnapMirror policy must have at least one rule without a schedule.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

creation_schedule

Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy_rule

SnapMirror policy rule for retention.

Name	Type	Description
count	integer	Number of snapshots to be kept for retention. Maximum value will differ based on type of relationship and scaling factor.
creation_schedule	creation_schedule	Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.
label	string	Snapshot label

Name	Type	Description
period	string	Specifies the duration for which the snapshots are locked. The retention period value represents a duration and must be in the ISO-8601 duration format. Years, months, days, hours, minutes, and seconds are represented as "P<num>Y","P<num>M","P<num>D","PT<num>H","PT<num>M" and "PT<num>S". Value "infinite" is also a valid input for Flexvol volumes and FlexGroup volumes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. The range of supported retention period values is between 1 second to infinite.</num></num></num></num></num></num>
prefix	string	Specifies the prefix for the snapshot name to be created as per the schedule. If no value is specified, then the label is used as the prefix.
preserve	boolean	Specifies the behavior when the snapshot retention count is reached on the SnapMirror destination for the rule. The default value is false, which means that the oldest snapshot is deleted to make room for new ones but only if the number of snapshots has exceeded the retention count specified in the 'count' property. When set to true and where the snapshots have reached the retention count, an incremental SnapMirror transfer will fail or if the rule has a schedule, snapshots will be no longer be created on the SnapMirror destination.

Name	Type	Description
warn	integer	Specifies the warning threshold count for the rule. The default value is zero. When set to a value greater than zero, an event is generated after the number of snapshots (for the particular rule) retained on a SnapMirror destination reaches the specified warning limit. The preserve property for the rule must be true in order to set the warn property to a value greater than zero.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

sync_common_snapshot_schedule

Schedule used to create common snapshots for synchronous relationships.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

transfer_schedule

The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy

SnapMirror policy information. SnapMirror policy can either be of type "async", "sync" or "continuous". The policy type "async" can be associated with a SnapMirror relationship that has either a FlexVol volume, FlexGroup volume or SVM as the endpoint.
The policy type "sync" along with "sync_type" as "sync" or "strict_sync" can be associated with a SnapMirror relationship that has a FlexVol volume as the endpoint. The policy type "sync" can have a "sync_type" of either "sync", "strict_sync", "automated_failover" or "automated_failover_duplex". If the "sync_type" is "sync", a write success is returned to the client after writing the data to the source endpoint and before writing the data to the destination endpoint. If the "sync_type" is "strict_sync", a write success is returned to the client after writing the data to both source and destination endpoints.
If the "sync_type" is "automated_failover", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides asymmetric active active access to the two storage copies. If the "sync_type" is "automated_failover_duplex", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides symmetric active active access to the two storage copies. Use the "sync" policy with "sync_type" as "automated_failover" or "automated_failover_duplex" to establish SnapMirror active sync relationships for business continuity use cases. SnapMirror relationships with policy types as "sync" and "sync_type" as "automated_failover" or "automated_failover_duplex" can be monitored by the Mediator, if configured. If the source Consistency Group endpoint is not reachable, the Mediator might trigger a failover to the destination consistency group endpoint.
A policy type of "continuous" can be associated with SnapMirror relationships that have either ONTAP S3 buckets or non-ONTAP object stores as endpoints. This type of policy is used for FabricLink owned targets.

Name	Type	Description
comment	string	Comment associated with the policy.
copy_all_source_snapshots	boolean	Specifies that all the source snapshots (including the one created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.
copy_latest_source_snapshot	boolean	Specifies that the latest source snapshot (created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.

Name	Type	Description
create_snapshot_on_source	boolean	Specifies whether a new snapshot should be created on the source at the beginning of an update or resync operation. This is applicable only to async policies. Property can only be set to 'false'.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.
name	string	Name of the policy.
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
sync_type	string	

Name	Type	Description
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a SnapMirror policy

DELETE `/snapmirror/policies/{uuid}`

Introduced In: 9.6

Deletes a SnapMirror policy.

Related ONTAP commands

- `snapmirror policy delete`

Example

```
DELETE "/api/snapmirror/policies/510c15d4-f9e6-11e8-bdb5-0050568e12c2"
```

Learn more

- DOC /snapmirror/policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror policy UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific SnapMirror policy

GET `/snapmirror/policies/{uuid}`

Introduced In: 9.6

Retrieves a specific SnapMirror policy.

Example

```
GET "/api/snapmirror/policies/567aaac0-f863-11e8-a666-0050568e12c2"
```

Learn more

- DOC /snapmirror/policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror policy UUID.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	Comment associated with the policy.
copy_all_source_snapshots	boolean	Specifies that all the source snapshots (including the one created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.

Name	Type	Description
copy_latest_source_snapshot	boolean	Specifies that the latest source snapshot (created by SnapMirror before the transfer begins) should be copied to the destination on a transfer. "Retention" properties cannot be specified along with this property. This is applicable only to async policies. Property can only be set to 'true'.
create_snapshot_on_source	boolean	Specifies whether a new snapshot should be created on the source at the beginning of an update or resync operation. This is applicable only to async policies. Property can only be set to 'false'.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.
name	string	Name of the policy.
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
sync_type	string	
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "copy_all_source_snapshots": 1,
  "copy_latest_source_snapshot": 1,
  "create_snapshot_on_source": "",
  "identity_preservation": "string",
  "name": "Asynchronous",
  "retention": [
    {
      "count": 7,
      "creation_schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "label": "hourly",
      "period": "P30D",
      "prefix": "string",
      "preserve": 1,
      "warn": 4
    }
  ],
  "rpo": 0,
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "sync_common_snapshot_schedule": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "sync_type": "string",
  "throttle": 0,
  "transfer_schedule": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "type": "string",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303842	SnapMirror policy is not supported.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

creation_schedule

Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy_rule

SnapMirror policy rule for retention.

Name	Type	Description
count	integer	Number of snapshots to be kept for retention. Maximum value will differ based on type of relationship and scaling factor.
creation_schedule	creation_schedule	Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.
label	string	Snapshot label

Name	Type	Description
period	string	Specifies the duration for which the snapshots are locked. The retention period value represents a duration and must be in the ISO-8601 duration format. Years, months, days, hours, minutes, and seconds are represented as "P<num>Y","P<num>M","P<num>D","PT<num>H","PT<num>M" and "PT<num>S". Value "infinite" is also a valid input for Flexvol volumes and FlexGroup volumes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. The range of supported retention period values is between 1 second to infinite.</num></num></num></num></num></num>
prefix	string	Specifies the prefix for the snapshot name to be created as per the schedule. If no value is specified, then the label is used as the prefix.
preserve	boolean	Specifies the behavior when the snapshot retention count is reached on the SnapMirror destination for the rule. The default value is false, which means that the oldest snapshot is deleted to make room for new ones but only if the number of snapshots has exceeded the retention count specified in the 'count' property. When set to true and where the snapshots have reached the retention count, an incremental SnapMirror transfer will fail or if the rule has a schedule, snapshots will be no longer be created on the SnapMirror destination.

Name	Type	Description
warn	integer	Specifies the warning threshold count for the rule. The default value is zero. When set to a value greater than zero, an event is generated after the number of snapshots (for the particular rule) retained on a SnapMirror destination reaches the specified warning limit. The preserve property for the rule must be true in order to set the warn property to a value greater than zero.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

sync_common_snapshot_schedule

Schedule used to create common snapshots for synchronous relationships.

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

transfer_schedule

The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the SnapMirror policy

PATCH `/snapmirror/policies/{uuid}`

Introduced In: 9.6

Updates the SnapMirror policy.

Important notes

- The properties "retention.label" and "retention.count" are mandatory if "retention" is provided in the input. The provided "retention.label" is the final list and it replaces the existing values.
- The value of the "identity_preservation" property cannot be changed if the SnapMirror relationships associated with the policy have different identity_preservation configurations.
- If the SnapMirror policy "identity_preservation" value matches the "identity_preservation" value of the associated SnapMirror relationships, then the "identity_preservation" value can be changed from a higher "identity_preservation" threshold value to a lower "identity_preservation" threshold value but not vice-versa. For example, the threshold value of the "identity_preservation" property can be changed from "full" to "exclude_network_config", but cannot be increased from "exclude_network_and_protocol_config" to "exclude_network_config" to "full". The threshold value of the "identity_preservation" cannot be changed to "exclude_network_and_protocol_config" for IDP SVMDR.

- The policy properties "copy_all_source_snapshots", "copy_latest_source_snapshot", and "create_snapshot_on_source" cannot be modified.
- No "retention" properties can be modified if the "copy_all_source_snapshots" or "copy_latest_source_snapshot" property is present in the policy.
- Replacing or deleting all retention rules of a policy that has the "create_snapshot_on_source" property set to false in a single API call is not supported.
- Modifying the property "retention.label" for all retention rules of a policy that has the "create_snapshot_on_source" property set to false in a single API call is not supported.
- To remove a transfer_schedule on a SnapMirror policy set the "transfer_schedule" to null (no-quotes) during SnapMirror policy PATCH.

Related ONTAP commands

- `snapmirror policy modify`

Example

Updating the "retention" property to add rules to a policy without any rules.

```
 PATCH "/api/snapmirror/policies/fe65686d-00dc-11e9-b5fb-0050568e3f83"
'{"retention": [{"label": "newlabel", "count": 2}, {"label": "weekly",
"count": 2, "creation_schedule": {"name": "weekly"}}, {"label": "daily",
"count": 14}]}'
```

Updating the "retention" property to add rules to a policy with existing rules {"retention": [{"label": "oldLabel1", "count": 2}, {"label": "oldLabel2", "count": 5}]

```
 PATCH "/api/snapmirror/policies/fe65686d-00dc-11e9-b5fb-0050568e3f83"
'{"retention": [{"label": "oldLabel1", "count": 2}, {"label": "oldLabel2",
"count": 5}, {"label": "newlabel", "count": 3}, {"label": "weekly",
"count": 1}]}'
```

Updating the "retention" property to remove a rule (oldLabel1) and add new rule to a policy with existing rules {"retention": [{"label": "oldLabel1", "count": 2}, {"label": "oldLabel2", "count": 3}]

```
 PATCH "/api/snapmirror/policies/fe65686d-00dc-11e9-b5fb-0050568e3f83"
'{"retention": [{"label": "oldLabel2", "count": 3}, {"label": "newlabel",
"count": 2}]}'
```

Updating "transfer_schedule", "throttle", and "identity_preservation" properties

```
 PATCH "/api/snapmirror/policies/8aef950b-3bef-11e9-80ac-0050568ea591"
'{"transfer_schedule.name" : "weekly", "throttle" : "100",
"identity_preservation":"exclude_network_and_protocol_config"}'
```

Removing the SnapMirror transfer_schedule for a SnapMirror policy. Transfer_schedule can be specified as UUID or name or both with the value set to null (no-quotes).

```
 PATCH "/api/snapmirror/policies/98bb2608-fc60-11e8-aa13-005056a707ff/"
'{"transfer_schedule":{"uuid":null, "name":null}}'
```

Updating the "retention" property to have retention.preserve and retention.warn for existing rule.

```
 PATCH "/api/snapmirror/policies/fe65686d-00dc-11e9-b5fb-0050568e3f83"
'{"retention": [{"label": "oldLabel1", "count": 3, "preserve": true,
"warn": 2}]}'
```

Learn more

- DOC /snapmirror/policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror policy UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
comment	string	Comment associated with the policy.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.

Name	Type	Description
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
uuid	string	Unique identifier of the SnapMirror policy.

Example request

```
{
  "comment": "string",
  "copy_all_source_snapshots": 1,
  "copy_latest_source_snapshot": 1,
  "create_snapshot_on_source": "",
  "identity_preservation": "string",
  "retention": [
    {
      "count": 7,
      "creation_schedule": {
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "label": "hourly",
      "period": "P30D",
      "prefix": "string",
      "preserve": 1,
      "warn": 4
    }
  ],
  "rpo": 0,
  "scope": "string",
  "sync_common_snapshot_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "throttle": 0,
  "transfer_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
6619714	Schedule specified is an interval schedule. SnapMirror does not support interval schedules.
13303842	SnapMirror policy is not supported.
13303843	Conflicting values between SnapMirror policy and SnapMirror relationships for either 'transfer_schedule, throttle or identity_preservation' properties
13303850	Invalid input parameter
13303887	Failed to create SnapMirror policy. Reason: Maximum number of allowed retention rules reached
13304050	Retention cannot be empty for a SnapMirror policy with 'create_snapshot_on_source' set to false.
13304092	Input value of the retention period property is invalid. For relationships with FlexVol volume or FlexGroup volume destinations, the duration must be in ISO 6801 format or can be infinite. For relationships with object store destinations, only duration values with Y, M or D and supported and must be in the specified range.
6621045	The property retention.warn is not supported for a policy when the retention.preserve property is false.
13304129	The property retention.warn value must be less than the property retention.count value for a rule in a policy.

Error code	Description
13304126	Enter a value for "count" in the range indicated in the error message.
13304130	The total retention.count value for all rules in a policy cannot exceed the value indicated in the error message."
13304131	Modifying property "retention.creation_schedule" for the policy is not supported because the policy is associated with a relationship with a FlexGroup volume endpoint.
13304011	Failed to create or modify the specified Snapmirror policy. Reason: The property retention.count cannot have a value greater than 1.
6621091	The specified Snapmirror policy cannot have a rule with a preserve value of true.
6621088	The specified Snapmirror policy must have at least one rule without a schedule.
6621129	Cannot add a snapshot creation schedule to the policy because it is associated with a Consistency Group relationship.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

creation_schedule

Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy_rule

SnapMirror policy rule for retention.

Name	Type	Description
count	integer	Number of snapshots to be kept for retention. Maximum value will differ based on type of relationship and scaling factor.
creation_schedule	creation_schedule	Schedule used to create snapshots on the destination for long term retention. Only cron schedules are supported for SnapMirror.
label	string	Snapshot label

Name	Type	Description
period	string	Specifies the duration for which the snapshots are locked. The retention period value represents a duration and must be in the ISO-8601 duration format. Years, months, days, hours, minutes, and seconds are represented as "P<num>Y","P<num>M","P<num>D","PT<num>H","PT<num>M" and "PT<num>S". Value "infinite" is also a valid input for Flexvol volumes and FlexGroup volumes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. The range of supported retention period values is between 1 second to infinite.</num></num></num></num></num></num>
prefix	string	Specifies the prefix for the snapshot name to be created as per the schedule. If no value is specified, then the label is used as the prefix.
preserve	boolean	Specifies the behavior when the snapshot retention count is reached on the SnapMirror destination for the rule. The default value is false, which means that the oldest snapshot is deleted to make room for new ones but only if the number of snapshots has exceeded the retention count specified in the 'count' property. When set to true and where the snapshots have reached the retention count, an incremental SnapMirror transfer will fail or if the rule has a schedule, snapshots will be no longer be created on the SnapMirror destination.

Name	Type	Description
warn	integer	Specifies the warning threshold count for the rule. The default value is zero. When set to a value greater than zero, an event is generated after the number of snapshots (for the particular rule) retained on a SnapMirror destination reaches the specified warning limit. The preserve property for the rule must be true in order to set the warn property to a value greater than zero.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

sync_common_snapshot_schedule

Schedule used to create common snapshots for synchronous relationships.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

transfer_schedule

The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_policy

SnapMirror policy information. SnapMirror policy can either be of type "async", "sync" or "continuous". The policy type "async" can be associated with a SnapMirror relationship that has either a FlexVol volume, FlexGroup volume or SVM as the endpoint.
The policy type "sync" along with "sync_type" as "sync" or "strict_sync" can be associated with a SnapMirror relationship that has a FlexVol volume as the endpoint. The policy type "sync" can have a "sync_type" of either "sync", "strict_sync", "automated_failover" or "automated_failover_duplex". If the "sync_type" is "sync", a write success is returned to the client after writing the data to the source endpoint and before writing the data to the destination endpoint. If the "sync_type" is "strict_sync", a write success is returned to the client after writing the data to both source and destination endpoints.
If the "sync_type" is "automated_failover", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides asymmetric active active access to the two storage copies. If the "sync_type" is "automated_failover_duplex", the policy can be associated with a SnapMirror active sync relationship that has a consistency group as the endpoint and provides symmetric active active access to the two storage copies. Use the "sync" policy with "sync_type" as "automated_failover" or "automated_failover_duplex" to establish SnapMirror active sync relationships for business continuity use cases. SnapMirror relationships with policy types as "sync" and "sync_type" as "automated_failover" or "automated_failover_duplex" can be monitored by the Mediator, if configured. If the source Consistency Group endpoint is not reachable, the Mediator might trigger a failover to the destination consistency group endpoint.
A policy type of "continuous" can be associated with SnapMirror relationships that have either ONTAP S3 buckets or non-ONTAP object stores as endpoints. This type of policy is used for FabricLink owned targets.

Name	Type	Description
comment	string	Comment associated with the policy.
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type.
network_compression_enabled	boolean	Specifies whether network compression is enabled for transfers. This is applicable only to the policies of type "async".
retention	array[snapmirror_policy_rule]	Rules for snapshot retention.

Name	Type	Description
rpo	integer	Specifies the duration of time for which a change to be propagated to a mirror should be delayed, in seconds. This is an intentional propagation delay between mirrors and is configurable down to zero, which means an immediate propagation. This is supported for policies of type 'continuous'.
scope	string	Set to "svm" for policies owned by an SVM, otherwise set to "cluster".
sync_common_snapshot_schedule	sync_common_snapshot_schedule	Schedule used to create common snapshots for synchronous relationships.
throttle	integer	Throttle in KB/s. Default to unlimited.
transfer_schedule	transfer_schedule	The schedule used to update asynchronous relationships. Only cron schedules are supported for SnapMirror.
uuid	string	Unique identifier of the SnapMirror policy.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SnapMirror relationships

SnapMirror relationships endpoint overview

Overview

This API manages asynchronous extended data protection (XDP) relationships for FlexVol volumes, FlexGroup volumes, or SVMs. It is also used to manage a synchronous relationship between FlexVol volumes, which provides zero RPO data protection and active synchronous relationship with automated failover between Application Consistency Group endpoints which provides zero RTO data protection.

To create an asynchronous extended data protection relationship with FlexVol volumes, FlexGroup volumes, Application Consistency Groups or SVMs, use the policy of type "async".

To create a synchronous relationship between FlexVol volumes, use the policy of type "sync" with sync_type of either "sync" or "strict_sync". To create an active synchronous relationship with automated failover between Application Consistency Group endpoints, use the policy of type "sync" with sync_type "automated_failover". You can create an asynchronous extended data protection relationship between the source and destination which can be used by the transfer APIs to perform SnapMirror "restore" operations.

To create FlexVol volume or FlexGroup volume SnapMirror relationships, the source volume must be in the "online" state and be a read_write type; the destination volume must be in the "online" state and be a data protection type.

In the case of an asynchronous or synchronous SnapMirror relationship for an Application Consistency Group of FlexVol volumes, SnapMirror creation results in the creation of an Application Consistency Group on the source cluster if it did not already exist with the exact same name and set of FlexVol volumes specified in the current operation. Additionally, if the specified Application Consistency Group is already present and is already a part of an existing SnapMirror relationship, the process fails. Creating an Application Consistency Group on the destination cluster is part of the SnapMirror creation workflow.

To create SnapMirror relationships between SVMs, the source SVM must be of subtype "default" and the destination SVM of subtype "dp_destination". Additionally, SVMs must be peered before a relationship can be established between them when the "create_destination" property is not specified. When the "create_destination" property is specified, the destination SVM is provisioned on the destination cluster and the SVM peer relationship is established between the source SVM and the new destination SVM, provided that the source SVM has SVM peering permissions for the destination cluster.

Data protection FlexVol volume SnapMirror relationships cannot be created using this API but existing relationships can be listed or managed.

The SnapMirror functionality is subdivided into relationship APIs and transfer APIs:

- SnapMirror relationship APIs are used to create and manage the SnapMirror relationships.
- SnapMirror transfer APIs are used to manage data transfers.

Retrieve information for SnapMirror relationships

GET `/snapmirror/relationships`

Introduced In: 9.6

Retrieves information for SnapMirror relationships whose destination endpoints are in the current SVM or the current cluster, depending on the cluster context.

Related ONTAP commands

- `snapmirror show`
- `snapmirror list-destinations`

Expensive properties

- `source.consistency_group_volumes.name`
- `destination.consistency_group_volumes.name`
- `svmdr_volumes.name`

Examples

The following examples show how to retrieve the list of SnapMirror relationships and the list of SnapMirror destinations.

1. Retrieving the list of SnapMirror relationships. This API must be run on the cluster containing the destination endpoint.

```
GET "/api/snapmirror/relationships/"
```

1. Retrieving the list of SnapMirror destinations on source. This must be run on the cluster containing the source endpoint.

```
GET "/api/snapmirror/relationships/?list_destinations_only=true"
```

1. Retrieving the relationship UUID of SnapMirror relationships with lag time greater than 2 days. This API must be run on the cluster containing the destination endpoint.

```
GET "/api/snapmirror/relationships/?fields=uuid&lag_time=>P2DT"
```

1. Retrieving the list of SnapMirror relationships with lag time less than 10 hours. This API must be run on the cluster containing the destination endpoint.

```
GET "/api/snapmirror/relationships/?lag_time=<PT10H"
```

1. Retrieving the list of constituent volumes for SVM DR Snapmirror relationships.

```
GET "/api/snapmirror/relationships/?fields=svmdr_volumes.name"
```

</private>

Learn more

- DOC /snapmirror/relationships

Parameters

Name	Type	In	Required	Description
list_destinations_only	boolean	query	False	Set to true to show relationships from the source only.
transfer_schedule.uuid	string	query	False	Filter by transfer_schedule.uuid • Introduced in: 9.11
transfer_schedule.name	string	query	False	Filter by transfer_schedule.name • Introduced in: 9.11
group_type	string	query	False	Filter by group_type • Introduced in: 9.11
healthy	boolean	query	False	Filter by healthy
preferred_site	string	query	False	Filter by preferred_site • Introduced in: 9.14

Name	Type	In	Required	Description
identity_preservation	string	query	False	Filter by identity_preservation • Introduced in: 9.11
svmdr_volumes.name	string	query	False	Filter by svmdr_volumes.name • Introduced in: 9.13
state	string	query	False	Filter by state
total_transfer_bytes	integer	query	False	Filter by total_transfer_bytes • Introduced in: 9.13
last_transfer_type	string	query	False	Filter by last_transfer_type • Introduced in: 9.11
io_serving_copy	string	query	False	Filter by io_serving_copy • Introduced in: 9.14
uuid	string	query	False	Filter by uuid
throttle	integer	query	False	Filter by throttle • Introduced in: 9.11
transfer.end_time	string	query	False	Filter by transfer.end_time • Introduced in: 9.9

Name	Type	In	Required	Description
transfer.last_updated_time	string	query	False	Filter by transfer.last_updated_time • Introduced in: 9.14
transfer.bytes_transferred	integer	query	False	Filter by transfer.bytes_transferred
transfer.state	string	query	False	Filter by transfer.state
transfer.total_duration	string	query	False	Filter by transfer.total_duration • Introduced in: 9.9
transfer.uuid	string	query	False	Filter by transfer.uuid
transfer.type	string	query	False	Filter by transfer.type • Introduced in: 9.14
last_transfer_network_compression_ratio	string	query	False	Filter by last_transfer_network_compression_ratio • Introduced in: 9.13
policy.name	string	query	False	Filter by policy.name
policy.type	string	query	False	Filter by policy.type
policy.uuid	string	query	False	Filter by policy.uuid
backoff_level	string	query	False	Filter by backoff_level • Introduced in: 9.14

Name	Type	In	Required	Description
total_transfer_duration	string	query	False	Filter by total_transfer_duration • Introduced in: 9.13
source.luns.name	string	query	False	Filter by source.luns.name • Introduced in: 9.16
source.luns.uuid	string	query	False	Filter by source.luns.uuid • Introduced in: 9.16
source.cluster.name	string	query	False	Filter by source.cluster.name • Introduced in: 9.7
source.cluster.uuid	string	query	False	Filter by source.cluster.uuid • Introduced in: 9.7
source.svm.name	string	query	False	Filter by source.svm.name
source.svm.uuid	string	query	False	Filter by source.svm.uuid
source.path	string	query	False	Filter by source.path
source.consistency_group_volumes.name	string	query	False	Filter by source.consistency_group_volumes.name • Introduced in: 9.8

Name	Type	In	Required	Description
consistency_group_failover.status.message	string	query	False	Filter by consistency_group_failover.status.message • Introduced in: 9.8
consistency_group_failover.status.code	string	query	False	Filter by consistency_group_failover.status.code • Introduced in: 9.8
consistency_group_failover.error.code	string	query	False	Filter by consistency_group_failover.error.code • Introduced in: 9.8
consistency_group_failover.error.message	string	query	False	Filter by consistency_group_failover.error.message • Introduced in: 9.8
consistency_group_failover.error.arguments.code	string	query	False	Filter by consistency_group_failover.error.arguments.code • Introduced in: 9.8
consistency_group_failover.error.arguments.message	string	query	False	Filter by consistency_group_failover.error.arguments.message • Introduced in: 9.8

Name	Type	In	Required	Description
consistency_group_failover.type	string	query	False	Filter by consistency_group_failover.type • Introduced in: 9.14
consistency_group_failover.state	string	query	False	Filter by consistency_group_failover.state • Introduced in: 9.14
lag_time	string	query	False	Filter by lag_time
destination.cluster.name	string	query	False	Filter by destination.cluster.name • Introduced in: 9.7
destination.cluster.uuid	string	query	False	Filter by destination.cluster.uuid • Introduced in: 9.7
destination.svm.name	string	query	False	Filter by destination.svm.name
destination.svm.uuid	string	query	False	Filter by destination.svm.uuid
destination.path	string	query	False	Filter by destination.path
destination.consistency_group_volumes.name	string	query	False	Filter by destination.consistency_group_volumes.name • Introduced in: 9.8

Name	Type	In	Required	Description
destination.luns.name	string	query	False	Filter by destination.luns.name • Introduced in: 9.16
destination.luns.uuid	string	query	False	Filter by destination.luns.uuid • Introduced in: 9.16
exported_snapshot	string	query	False	Filter by exported_snapshot
restore	boolean	query	False	Filter by restore
unhealthy_reason.arguments	string	query	False	Filter by unhealthy_reason.arguments • Introduced in: 9.14
unhealthy_reason.message	string	query	False	Filter by unhealthy_reason.message
unhealthy_reason.code	string	query	False	Filter by unhealthy_reason.code
master_bias_activated_site	string	query	False	Filter by master_bias_activated_site • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snapmirror_relationship]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "backoff_level": "medium",
      "consistency_group_failover": {
        "error": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "state": "string",
        "status": {
          "code": "string",
          "message": "string"
        },
        "type": "string"
      },
      "destination": {
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
```

```
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "consistency_group_volumes": [
          {
            "name": "volume1"
          }
        ],
        "luns": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "path": "svm1:volume1",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "exported_snapshot": "string",
      "group_type": "consistency_group",
      "identity_preservation": "string",
      "io_serving_copy": "C1_sti85-vsim-ucs209a_cluster, C1_sti85-vsim-
ucs209c_cluster",
      "lag_time": "PT8H35M42S",
      "last_transfer_network_compression_ratio": 61,
      "last_transfer_type": "initialize",
      "master_bias_activated_site": "C1_sti85-vsim-ucs209a_cluster",
      "policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "Asynchronous",
        "type": "string",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
```

```
      "preferred_site": "C1_sti85-vsim-ucs209a_cluster",
      "restore_to_snapshot": "string",
      "source": {
        "cluster": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "cluster1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "consistency_group_volumes": [
          {
            "name": "volume1"
          }
        ],
        "luns": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "/vol/volume1/lun1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "path": "svm1:volume1",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "state": "snapmirrored",
      "svmdr_volumes": [
        {
          "name": "volume1"
        }
      ],
      "throttle": 0,
      "total_transfer_bytes": 1098210312,
      "total_transfer_duration": "PT3M21S",
```

```
      "transfer": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "end_time": "2020-12-02 21:36:19 -0500",
        "last_updated_time": "2023-09-14 18:39:19 -0400",
        "state": "string",
        "total_duration": "PT28M41S",
        "type": "initialize",
        "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
      },
      "transfer_schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "unhealthy_reason": [
        {
          "arguments": [],
          "code": "6621444",
          "message": "Failed to complete update operation on one or
more item relationships."
        },
        {
          "arguments": [],
          "code": "6621445",
          "message": "Group Update failed"
        }
      ],
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303825	Could not retrieve information for the SnapMirror policy type
13303817	Unknown value for the Snapmirror State

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

SnapMirror Consistency Group failover error message.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

status

Name	Type	Description
code	string	Status code
message	string	SnapMirror Consistency Group failover status.

snapmirror_consistency_group_failover

SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation.

Name	Type	Description
error	error	SnapMirror Consistency Group failover error message.
state	string	SnapMirror Consistency Group failover state.
status	status	
type	string	SnapMirror Consistency Group failover type.

bucket_retention

Specifies the retention-mode and default retention period configured on the destination bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

Name	Type	Description
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

storage_service

Name	Type	Description
enabled	boolean	This property indicates whether to create the destination endpoint using storage service. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.7 • x-nullable: true
enforce_performance	boolean	Optional property to enforce storage service performance on the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • Default value: • Introduced in: 9.7 • x-nullable: true

Name	Type	Description
name	string	Optional property to specify the storage service name for the destination endpoint. This property is considered when the property "create_destination.storage_service.enabled" is set to "true". When the property "create_destination.storage_service.enabled" is set to "true" and the "create_destination.storage_service.name" for the endpoint is not specified, then ONTAP selects the highest storage service available on the cluster to provision the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • enum: ["extreme", "performance", "value"] • Introduced in: 9.6 • x-nullable: true

tiering

Name	Type	Description
policy	string	Optional property to specify the destination endpoint’s tiering policy when "create_destination.tiering.supported" is set to "true". This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property determines whether the user data blocks of the destination endpoint in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of the destination endpoint volume blocks increases if they are accessed frequently and decreases when they are not. all ‐ This policy allows tiering of both destination endpoint snapshots and the user transferred data blocks to the cloud store as soon as possible by ignoring the temperature on the volume blocks. This tiering policy is not applicable for Consistency Group destination endpoints or for synchronous relationships. auto ‐ This policy allows tiering of both destination endpoint snapshots and the active file system user data to the cloud store none ‐ Destination endpoint volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the destination endpoint volume snapshots not associated with the active file system. The default tiering policy is "snapshot_only" for a FlexVol volume and "none" for a FlexGroup volume. This property is supported for Unified ONTAP destination endpoints only. • enum: ["all", "auto", "none", "snapshot_only"] Introduced in: 9.6 x-nullable: true

Name	Type	Description
supported	boolean	Optional property to enable provisioning of the destination endpoint volumes on FabricPool aggregates. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. Only FabricPool aggregates are used if this property is set to "true" and only non FabricPool aggregates are used if this property is set to "false". Tiering support for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. Note that in order to tier data, not only do the destination endpoint volumes need to support tiering by using FabricPools, the "create_destination.tiering.policy" must not be "none". A destination endpoint that uses FabricPools but has a tiering "policy" of "none" supports tiering but will not tier any data. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.6 • x-nullable: true

snapmirror_destination_creation

Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-svm-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-svm-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-svm-name:> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either from the source or the destination cluster. For an SVM destination endpoint, the

properties in this object can be specified from the destination cluster only. This object is not supported for non ONTAP endpoints. While protecting a S3 Bucket, the optional "size" property can be used to create ONTAP S3 Bucket destination endpoint of the specified size.</destination-svm-name:></destination-svm-name:></destination-svm-name:dp-volume-name>

Name	Type	Description
bucket_retention	bucket_retention	Specifies the retention-mode and default retention period configured on the destination bucket.
enabled	boolean	Optional property to create the destination endpoint when establishing a SnapMirror relationship. It is assumed to be "false" if no other property is set and assumed to be "true" if any other property is set.
size	integer	Optional property to specify the size of destination endpoint in bytes. This property is applicable only to ONTAP S3 Bucket endpoints. The minimum size for S3 bucket is 80MB and maximum size is 64TB. If not specified, system will create destination with default size of 800GB. • Introduced in: 9.10 • x-nullable: true
snapshot_locking_enabled	boolean	Optional property to create the destination endpoint with snapshot locking enabled when establishing a SnapMirror relationship. This property is applicable to FlexVol volumes and FlexGroup volumes.
storage_service	storage_service	
tiering	tiering	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination

SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

policy

Basic policy information of the relationship.

Name	Type	Description
_links	_links	
name	string	Name of the SnapMirror policy.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

snapmirror_source_endpoint

Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.14 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

svmdr_volumes

Name	Type	Description
name	string	The name of the volume.

transfer

Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.

Name	Type	Description
_links	_links	
bytes_transferred	integer	Total bytes transferred in the current or last successful transfer.
end_time	string	End time of the last transfer.
last_updated_time	string	Last updated time of the bytes transferred in the current transfer.
state	string	
total_duration	string	Elapsed time to transfer all snapshots for the last successful transfer.
type	string	Specifies the operation type of the current transfer on the relationship. The *initialize* transfer occurs when the relationship state changes from "uninitialized" to "snapmirrored" or "in_sync". The *update* transfer occurs when snapshots are being transferred from the source endpoint to the destination endpoint as part of a scheduled or manual update. The *resync* transfer occurs when the relationship state changes from "broken_off" to "snapmirrored" or "in_sync". The *restore* transfer occurs when a snapshot is being restored from a destination endpoint to another endpoint.
uuid	string	Transfer UUID. This property is applicable only for active transfers.

transfer_schedule

Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	
name	string	Job schedule name

Name	Type	Description
uuid	string	Job schedule UUID

snapmirror_error

SnapMirror error

Name	Type	Description
arguments	array[string]	Arguments present in the error message encountered.
code	string	Error code
message	string	Error message

snapmirror_relationship

SnapMirror relationship information. The SnapMirror relationship can be either "async" or "sync" based on the type of SnapMirror policy associated with the relationship. The source and destination endpoints of a SnapMirror relationship must be of the same type, for example, if the source endpoint is a FlexVol volume then the destination endpoint must be a FlexVol volume.
The SnapMirror policy type "async" can be used when the SnapMirror relationship has FlexVol volume or FlexGroup volume or SVM as the endpoint. The SnapMirror policy type "sync" can be used when the SnapMirror relationship has FlexVol volume as the endpoint. The SnapMirror policy type "sync" with "sync_type" as "automated_failover" can be used when the SnapMirror relationship has Consistency Group as the endpoint.

Name	Type	Description
_links	_links	
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.

Name	Type	Description
consistency_group_failover	snapmirror_consistency_group_failover	SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation. • Introduced in: 9.8 • readOnly: 1
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
exported_snapshot	string	Snapshot exported to clients on destination.

Name	Type	Description
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship's policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.

Name	Type	Description
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.
policy	policy	Basic policy information of the relationship.
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".

Name	Type	Description
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore	boolean	Set to true to create a relationship for restore. To trigger restore-transfer, use transfers POST on the restore relationship. SnapMirror relationships with the policy type "async" can be restored. SnapMirror relationships with the policy type "sync" cannot be restored.
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying

Name	Type	Description
svmdr_volumes	array[svmdr_volumes]	Specifies the list of constituent FlexVol volumes and FlexGroup volumes for an SVM DR SnapMirror relationship. FlexGroup constituents are not considered.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a SnapMirror relationship

POST `/snapmirror/relationships`

Introduced In: 9.6

Creates a SnapMirror relationship. This API can optionally provision the destination endpoint when it does not exist. This API must be executed on the cluster containing the destination endpoint unless the destination endpoint is being provisioned. When the destination endpoint is being provisioned, this API can also be executed from the cluster containing the source endpoint. Provisioning of the destination endpoint from the source cluster is supported for the FlexVol volume, FlexGroup volume and Application Consistency Group endpoints.

For SVM endpoints, provisioning the destination SVM endpoint is not supported from the source cluster. When the destination endpoint exists, the source SVM and the destination SVM must be in an SVM peer relationship. When provisioning the destination endpoint, the SVM peer relationship between the source SVM and the destination SVM is established as part of the destination provision, provided that the source SVM has SVM peering permissions for the destination cluster.

Required properties

- `source.path` - Path to the source endpoint of the SnapMirror relationship.
- `destination.path` - Path to the destination endpoint of the SnapMirror relationship.
- `source.consistency_group_volumes` - List of FlexVol volumes of type "RW" that are constituents of an Application Consistency Group.
- `destination.consistency_group_volumes` - List of FlexVol volumes of type "DP" that are constituents of an Application Consistency Group.

Recommended optional properties

- `policy.name` or `policy.uuid` - Policy governing the SnapMirror relationship.
- `state` - Set the state to "snapmirrored" to automatically initialize the relationship.
- `create_destination.enabled` - Enable this property to provision the destination endpoint.

Default property values

If not specified in POST, the following default property values are assigned:

- `policy.name` - *Asynchronous*
- `restore` - *false*
- `create_destination.tiering.policy` - *`snapshot_only`* (when `create_destination.tiering.supported` is *true* for FlexVol volume)
- `create_destination.tiering.policy` - *`none`* (when `create_destination.tiering.supported` is *true* for FlexGroup volume)
- `create_destination.storage_service.enforce_performance` - *`false`*
- `destination.ipspace` - *`Default`*
- `throttle` - *0*
- `backoff_level` - *`high`*
- `policy.name` - *Asynchronous*
- `restore` - *false*
- `destination.ipspace` - *`Default`*
- `throttle` - *0*
- `backoff_level` - *`high`*

Related ONTAP commands

- `snapmirror create`
- `snapmirror protect`

Important notes

- The property "transfer_schedule" if set on a SnapMirror relationship overrides the "transfer_schedule" set on the policy being used with the SnapMirror relationship.
- The property "throttle" if set on a SnapMirror relationship overrides the "throttle" set on the policy being used with the SnapMirror relationship.
- The properties "transfer_schedule" and "throttle" are not supported when "restore" is set to "true".
- The property "transfer_schedule" cannot be set to null (no-quotes) during SnapMirror relationship POST.
- The property "throttle" is not supported when "create_destination.enabled" is set to "true".
- The property "identity_preservation" is applicable to only SnapMirror relationships with SVM endpoints and it indicates which configuration of the source SVM is replicated to the destination SVM.
- The property "backoff_level" is not supported when "create_destination.enabled" is set to "true".
- The property "backoff_level" is only applicable for FlexVol SnapMirror relationships.

Examples

The following examples show how to create FlexVol volumes, FlexGroup volumes, SVM and Application Consistency Group SnapMirror relationships. Note that the source SVM name must be the local name of the

peer SVM.

Creating a FlexVol SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"}}'
```

Creating a FlexGroup SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:source_flexgroup"}, "destination": { "path":
"dst_svm:dest_flexgroup"}}'
```

Creating a SVM SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": { "path": "src_svm:"},
"destination": { "path": "dst_svm:"}}'
```

Creating a SnapMirror relationship in order to restore from a destination.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"},
"restore": "true"}'
```

Provision the destination FlexVol volume endpoint and create a SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"},
"create_destination": { "enabled": "true" }}'
```

Provision the destination FlexVol volume endpoint on a Fabricpool with a tiering policy and create a SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"},
"create_destination": { "enabled": "true", "tiering": { "supported":
"true", "policy": "auto" } } }'
```

Provision the destination FlexVol volume endpoint using storage service and create a SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path":
"src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"},
"create_destination": { "enabled": "true", "storage_service": { "enabled":
"true", "name": "extreme", "enforce_performance": "true" } } }'
```

Provision the destination SVM endpoint and create a SnapMirror relationship of type XDP.

```
 POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:",
"cluster": { "name": "cluster_src" }}, "destination": { "path":
"dst_svm:"}, "create_destination": { "enabled: "true" }}'
```

Create an asynchronous SnapMirror relationship with Application Consistency Group endpoint.

```
 POST "/api/snapmirror/relationships/" '{"source": { "path":
"src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name":
"src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path":
"dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name":
"dst_vol_1" }, { "name": "dst_vol_2" }] }, "policy": "Asynchronous" }'
```

Create an asynchronous SnapMirror relationship with a child Application Consistency Group endpoint.

```
 POST "/api/snapmirror/relationships/" '{"source": { "path":
"src_svm:/cg/parent_src_cg/sub_child_cg" }, "destination": { "path":
"dst_svm:/cg/cg_dst_vol" }, "policy": "MirrorAndVault" }'
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name": "src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path": "dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name": "dst_vol_1" }, { "name": "dst_vol_2" }] }, "create_destination": { "enabled": "true", "tiering": { "supported": "true" } }, "policy": "Asynchronous", "state": "snapmirrored" }'

```
 Create a SnapMirror active sync relationship with the Application
Consistency Group endpoint.
```

POST "/api/snapmirror/relationships/" '{"source": { "path": "src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name": "src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path": "dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name": "dst_vol_1" }, { "name": "dst_vol_2" }] }, "policy": "AutomatedFailOver" }'

```
 Provision the destination Application Consistency Group endpoint on a
Fabricpool with a tiering policy, create a SnapMirror active sync
relationship with a SnapMirror policy of type "sync" and sync_type of
"automated_failover", and initialize the SnapMirror relationship with
state as "in_sync".
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name": "src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path": "dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name": "dst_vol_1" }, { "name": "dst_vol_2" }] }, "create_destination": { "enabled": "true", "tiering": { "supported": "true" } }, "policy": "AutomatedFailOver", "state": "in_sync" }'

```
 Provision the destination Application Consistency Group endpoint with
storage service, create a SnapMirror active sync relationship with a
SnapMirror policy of type "sync" and sync_type of "automated_failover",
and initialize the SnapMirror relationship with state as "in_sync".
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name": "src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path": "dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name": "dst_vol_1" }, { "name": "dst_vol_2" }] }, "create_destination": { "enabled": "true", "storage_service": { "enabled": "true", "name": "extreme", "enforce_performance": "true" } }, "policy": "AutomatedFailOver", "state": "in_sync" }'

```
Provision the destination Application Consistency Group endpoint with
storage service, create an asynchronous application consistency group
relationship with a SnapMirror policy of type "async" and an async_type of
"XDPDefault", and initialize the SnapMirror relationship with state as
"SnapMirrored".
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:/cg/cg_src_vol", "consistency_group_volumes": [{ "name": "src_vol_1" }, { "name": "src_vol_2" }] }, "destination": { "path": "dst_svm:/cg/cg_dst_vol", "consistency_group_volumes": [{ "name": "dst_vol_1" }, { "name": "dst_vol_2" }] }, "create_destination": { "enabled": "true", "storage_service": { "enabled": "true", "name": "extreme", "enforce_performance": "true" } }, "policy": "XDPDefault", "state": "snapmirrored" }'

```
 Creating a FlexVol volume SnapMirror relationship of type XDP with
transfer_schedule and throttle.
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"}, "transfer_schedule":{"uuid":"817500fa-092d-44c5-9c10-7b54f7b2f20a", "name":"5min"}, "throttle":100}'

```
 Creating an asynchronous SnapMirror relationship with backoff_level set
to medium.
```

POST "/api/snapmirror/relationships/" '{"source": {"path": "src_svm:src_vol"}, "destination": { "path": "dst_svm:dst_vol"}, "backoff_level": "medium"}'
`

Learn more

- DOC /snapmirror/relationships

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
validate_only	boolean	query	False	Validate the operation and its parameters, without actually performing the operation. • Introduced in: 9.7

Request Body

Name	Type	Description
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.

Name	Type	Description
create_destination	snapmirror_destination_creation	Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-SVM-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-SVM-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-SVM-name:/cg/consistency-group-name> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either from the source or the destination cluster. For an SVM destination

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
exported_snapshot	string	Snapshot exported to clients on destination.
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?

Name	Type	Description
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship's policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.
policy	policy	Basic policy information of the relationship.

Name	Type	Description
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore	boolean	Set to true to create a relationship for restore. To trigger restore-transfer, use transfers POST on the restore relationship. SnapMirror relationships with the policy type "async" can be restored. SnapMirror relationships with the policy type "sync" cannot be restored.

Name	Type	Description
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying "create_destination" property, set

Name	Type	Description
svmdr_volumes	array[svmdr_volumes]	Specifies the list of constituent FlexVol volumes and FlexGroup volumes for an SVM DR SnapMirror relationship. FlexGroup constituents are not considered.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

Example request

```
{
  "backoff_level": "medium",
  "create_destination": {
    "bucket_retention": {
      "default_period": "P10Y",
      "mode": "governance"
    },
    "storage_service": {
      "name": "string"
    },
    "tiering": {
      "policy": "string"
    }
  },
  "destination": {
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "consistency_group_volumes": [
      {
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    ],
    "ipspace": "Default",
    "luns": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "path": "svm1:volume1",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "exported_snapshot": "string",
  "group_type": "consistency_group",
  "identity_preservation": "string",
  "io_serving_copy": "C1_sti85-vsim-ucs209a_cluster, C1_sti85-vsim-
ucs209c_cluster",
  "lag_time": "PT8H35M42S",
  "last_transfer_network_compression_ratio": 61,
  "last_transfer_type": "initialize",
```

```
  "master_bias_activated_site": "C1_sti85-vsim-ucs209a_cluster",
  "policy": {
    "name": "Asynchronous",
    "type": "string",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "preferred_site": "C1_sti85-vsim-ucs209a_cluster",
  "restore_to_snapshot": "string",
  "source": {
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "consistency_group_volumes": [
      {
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    ],
    "luns": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "path": "svm1:volume1",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "state": "snapmirrored",
  "svmdr_volumes": [
    {
      "name": "volume1"
    }
  ],
  "throttle": 0,
  "total_transfer_bytes": 1098210312,
  "total_transfer_duration": "PT3M21S",
  "transfer": {
    "end_time": "2020-12-02 21:36:19 -0500",
    "last_updated_time": "2023-09-14 18:39:19 -0400",
    "state": "string",
    "total_duration": "PT28M41S",
    "type": "initialize",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
```

```
  "transfer_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "unhealthy_reason": [
    {
      "arguments": [],
      "code": "6621444",
      "message": "Failed to complete update operation on one or more
item relationships."
    },
    {
      "arguments": [],
      "code": "6621445",
      "message": "Group Update failed"
    }
  ],
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "uuid": "string"
  }
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918657	Invalid duration value for the "retention_period" field.
	1115542
Invalid value given for the field.	
6619441	The source volume cannot be the same as the destination volume.
	6619599
Only the "none" tiering policy is supported when creating a destination volume with "snapshot_locking_enabled" set to true or if "snapshot_locking_enabled" is set to true on the source volume.	
6619637	Relationship with specified destination volume already exists.
	6619699
Schedule not found.	
6620374	Internal error. Failed to get SVM information.
	6620478
Internal error. Failed to check SnapMirror capability.	
6620608	Child consistency group cannot be a destination endpoint for SnapMirror relationship creation.
	6620654
Invalid SnapMirror Consistency Group name.	
6621125	The policy is not valid for relationships with FlexGroup volume endpoints. Only policies without snapshot creation schedules are supported for these relationships.
	6621128

Error Code	Description
Policy is not valid because it has snapshot creation schedules associated with it. Such policies cannot be used for relationships with Consistency Group endpoints.	
6621458	The destination Consistency Group is the source of a SnapMirror Synchronous (SM-S) relationship. Sources of SM-S relationships cannot be the destination of any other SnapMirror relationship.
	6621782
A property of the policy is not valid for relationships between these endpoints.	
6621834	Object store configuration does not exist for the specified SVM.
	6622088
SnapMirror Asynchronous relationship is not supported on a Consistency Group volume that has snapshot locking enabled.	
13303819	Could not retrieve SnapMirror policy information.
	13303821
Invalid SnapMirror policy UUID.	
13303841	This operation is not supported for SnapMirror relationships between these endpoints.
	13303852
destination.path provided does not contain ":".	
13303853	Restore relationships are not supported for SVM-DR endpoints.
	13303866
Associating the specified SnapMirror policy with this SnapMirror relationship is not supported.	
13303868	Create of destination endpoint and SnapMirror relationship failed.
	13303869
Creating a destination endpoint is not supported for restore relationships.	
13303870	A tiering policy cannot be specified if tiering is not being set to supported.
	13303871
Storage service properties cannot be specified if the storage service is not being enabled.	

Error Code	Description
13303872	Specified property requires a later effective cluster version.
	13303873
Specifying a state when creating a relationship is only supported when creating a destination endpoint.	
13303874	Specified state is not supported when creating this relationship.
	13303875
Destination aggregates do not have sufficient space for hosting copies of source volumes.	
13303876	Destination cluster does not have composite aggregates.
	13303877
Source or destination cluster must be specified.	
13303878	The specified fields do not match.
	13303879
Source cluster name or UUID is needed to provision a destination SVM on the local cluster.	
13303880	Source cluster must be remote for provisioning a destination SVM on the local cluster.
	13303881
Network validation failed.	
13303882	SVM validation failed.
	13303883
Encryption is not enabled on the destination cluster.	
13303886	SVM peer permission not found.
	13303887
Synchronous SnapMirror relationships between FlexGroup volumes are not supported.	
13303888	Synchronous SnapMirror relationships require an effective cluster version of 9.5 or later on both the source and destination clusters.
	13303889
Asynchronous SnapMirror relationships between FlexGroup volumes require an effective cluster version of 9.5 or later on both the source and destination clusters.	

Error Code	Description
13303890	Asynchronous SnapMirror relationships between FlexVol volumes require an effective cluster version of 9.3, 9.5, or later on both the source and destination clusters.
	13303891
Creating a destination endpoint with storage service requires an effective cluster version of 9.7 or later.	
13303892	Fetching remote information from the destination cluster failed.
	13303893
Updating job description failed.	
13303894	Destination volume name is invalid. It must contain the source volume name and have a suffix when creating a destination endpoint on a cluster with an effective cluster version of 9.6 or earlier.
	13303895
Operation on the remote destination cluster is not supported.	
13303916	FlexGroup volumes are not supported on SnapLock aggregates.
	13303918
No suitable destination aggregate type is available.	
13303919	Only FabricPool enabled aggregates are available on the destination.
	13303920
Only SnapLock aggregates are available on the destination. FlexGroup volumes are not supported on SnapLock aggregates.	
13303921	Unable to retrieve the SnapMirror capabilities of the destination cluster.
	13303922
Specified source SVM is not a data SVM.	
13303923	Specified destination SVM is not a data SVM.
	13303924
Source SVM has an invalid snapshot policy.	
13303925	SnapMirror validation has failed.
	13303930
The specified tiering policy is not supported for destination volumes of Synchronous relationships.	

Error Code	Description
13303938	Fetching information from the local cluster failed.
	13303939
Could not create an SVM peer relationship.	
13303944	An SVM-DR relationship is not supported because the source SVM has CIFS configured and the associated SnapMirror policy has either the "identity_preservation" property not set or set to "exclude_network_and_protocol_config".
	13303949
This SnapMirror policy is only supported for relationships with object store destination endpoints.	
13303966	Consistency Group relationships require a policy of type "sync" with a sync_type of "automated_failover".
	13303967
Consistency Group volume is not a FlexVol volume.	
13303968	Unsupported volume type for the Consistency Group.
	13303969
SnapMirror relationships between SVM endpoints and object store endpoints are not supported.	
13303970	Unsupported policy type for the Consistency Group.
	13303971
SnapMirror relationships between Consistency Group endpoints and object store endpoints are not supported.	
13303976	Source or destination SVM is already part of an SVM-DR relation.
	13303977
Destination Consistency Group volume UUIDs are not expected while provisioning the destination volumes.	
13303978	Number of Consistency Group volume names and UUIDs does not match.
	13303979
Number of Consistency Group volumes exceeds the allowed limit.	
13303980	Number of source and destination Consistency Group volumes do not match.
	13303981
ISCSI or FCP protocol is not configured.	

Error Code	Description
13303982	SAN data interface is not configured on the SVM.
	13304021
No suitable storage can be found meeting the specified requirements. No FabricPool enabled aggregates are available on the destination.	
13304022	No suitable storage can be found meeting the specified requirements. No non-root, non-taken-over, non-SnapLock, non-composite aggregates are available on the destination.
	13304032
In an "All SAN Array", an SVM-DR relationship is not supported when the associated SnapMirror policy does not have the "identity_preservation" property set to "exclude_network_and_protocol_config".	
13304080	Specified UUID and name do not match.
	13304082
Specified properties are mutually exclusive.	
13304083	The specified property is not supported because all nodes in the cluster are not capable of supporting the property.
	13304093
The property specified is not supported for the specified relationships.	
13304098	This SnapMirror policy is not supported for SnapMirror relationships with SnapLock volumes.
	13304099
SnapLock Compliance Clock is not running on all nodes in the destination cluster.	
13304108	Schedule not found in the Administrative SVM or the SVM for the relationship.
	13304112
File restore from a Consistency Group asynchronous SnapMirror relationship endpoint is not supported.	
13304132	Creating a destination endpoint is not supported with the "backoff_level" property.
	13304144
SnapLock is not licensed on the destination cluster.	

Error Code	Description
13304155	Invalid SnapMirror consistency group name. The name must be from 1 to 30 characters in length. The first letter must be one of A-Z, a-z or "*". The remaining characters must be A-Z, a-z, 0-9 or "*".
	53411897
The specified source volumes do not match the volumes contained in the source consistency group.	Also see the table of common errors in the Response body overview section of this documentation. ===== Above error msgs have been added in sorted(ascending) order ===== of error codes, for example - 13303945 is error code for ===== SM_REST_SCHEDULE_CONFLICT_FOR_SM_OP and for 13303949 is err ===== code for SM_REST_POLICY_ONLY_SUPPORTED_FOR_OBJSTORE, so ===== SM_REST_SCHEDULE_CONFLICT_FOR_SM_OP has been placed before ===== SM_REST_POLICY_ONLY_SUPPORTED_FOR_OBJSTORE. ===== Also for private error msg, add private tags as after adding the error msg at correct place(in sorted order). ===== Please make sure new error messages are being put at correct place ===== so that order is maintained.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

SnapMirror Consistency Group failover error message.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

status

Name	Type	Description
code	string	Status code
message	string	SnapMirror Consistency Group failover status.

snapmirror_consistency_group_failover

SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation.

Name	Type	Description
state	string	SnapMirror Consistency Group failover state.
status	status	
type	string	SnapMirror Consistency Group failover type.

bucket_retention

Specifies the retention-mode and default retention period configured on the destination bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

storage_service

Name	Type	Description
enabled	boolean	This property indicates whether to create the destination endpoint using storage service. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.7 • x-nullable: true
enforce_performance	boolean	Optional property to enforce storage service performance on the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • Default value: 1 • Introduced in: 9.7 • x-nullable: true

Name	Type	Description
name	string	Optional property to specify the storage service name for the destination endpoint. This property is considered when the property "create_destination.storage_service.enabled" is set to "true". When the property "create_destination.storage_service.enabled" is set to "true" and the "create_destination.storage_service.name" for the endpoint is not specified, then ONTAP selects the highest storage service available on the cluster to provision the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • enum: ["extreme", "performance", "value"] • Introduced in: 9.6 • x-nullable: true

tiering

Name	Type	Description
policy	string	Optional property to specify the destination endpoint’s tiering policy when "create_destination.tiering.supported" is set to "true". This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property determines whether the user data blocks of the destination endpoint in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of the destination endpoint volume blocks increases if they are accessed frequently and decreases when they are not. all ‐ This policy allows tiering of both destination endpoint snapshots and the user transferred data blocks to the cloud store as soon as possible by ignoring the temperature on the volume blocks. This tiering policy is not applicable for Consistency Group destination endpoints or for synchronous relationships. auto ‐ This policy allows tiering of both destination endpoint snapshots and the active file system user data to the cloud store none ‐ Destination endpoint volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the destination endpoint volume snapshots not associated with the active file system. The default tiering policy is "snapshot_only" for a FlexVol volume and "none" for a FlexGroup volume. This property is supported for Unified ONTAP destination endpoints only. • enum: ["all", "auto", "none", "snapshot_only"] Introduced in: 9.6 x-nullable: true

Name	Type	Description
supported	boolean	Optional property to enable provisioning of the destination endpoint volumes on FabricPool aggregates. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. Only FabricPool aggregates are used if this property is set to "true" and only non FabricPool aggregates are used if this property is set to "false". Tiering support for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. Note that in order to tier data, not only do the destination endpoint volumes need to support tiering by using FabricPools, the "create_destination.tiering.policy" must not be "none". A destination endpoint that uses FabricPools but has a tiering "policy" of "none" supports tiering but will not tier any data. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.6 • x-nullable: true

snapmirror_destination_creation

Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-svm-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-svm-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-svm-name:> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either from the source or the destination cluster. For an SVM destination endpoint, the

properties in this object can be specified from the destination cluster only. This object is not supported for non ONTAP endpoints. While protecting a S3 Bucket, the optional "size" property can be used to create ONTAP S3 Bucket destination endpoint of the specified size.</destination-svm-name:></destination-svm-name:></destination-svm-name:dp-volume-name>

Name	Type	Description
bucket_retention	bucket_retention	Specifies the retention-mode and default retention period configured on the destination bucket.
enabled	boolean	Optional property to create the destination endpoint when establishing a SnapMirror relationship. It is assumed to be "false" if no other property is set and assumed to be "true" if any other property is set.
size	integer	Optional property to specify the size of destination endpoint in bytes. This property is applicable only to ONTAP S3 Bucket endpoints. The minimum size for S3 bucket is 80MB and maximum size is 64TB. If not specified, system will create destination with default size of 800GB. • Introduced in: 9.10 • x-nullable: true
snapshot_locking_enabled	boolean	Optional property to create the destination endpoint with snapshot locking enabled when establishing a SnapMirror relationship. This property is applicable to FlexVol volumes and FlexGroup volumes.
storage_service	storage_service	
tiering	tiering	

cluster

Name	Type	Description
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.
uuid	string	Unique identifier of the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
ipspace	string	Optional property to specify the IPSpace of the SVM.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

policy

Basic policy information of the relationship.

Name	Type	Description
name	string	Name of the SnapMirror policy.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

snapmirror_source_endpoint

Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.14 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

svmdr_volumes

Name	Type	Description
name	string	The name of the volume.

transfer

Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.

Name	Type	Description
bytes_transferred	integer	Total bytes transferred in the current or last successful transfer.
end_time	string	End time of the last transfer.
last_updated_time	string	Last updated time of the bytes transferred in the current transfer.
state	string	
total_duration	string	Elapsed time to transfer all snapshots for the last successful transfer.
type	string	Specifies the operation type of the current transfer on the relationship. The *initialize* transfer occurs when the relationship state changes from "uninitialized" to "snapmirrored" or "in_sync". The *update* transfer occurs when snapshots are being transferred from the source endpoint to the destination endpoint as part of a scheduled or manual update. The *resync* transfer occurs when the relationship state changes from "broken_off" to "snapmirrored" or "in_sync". The *restore* transfer occurs when a snapshot is being restored from a destination endpoint to another endpoint.
uuid	string	Transfer UUID. This property is applicable only for active transfers.

transfer_schedule

Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the

"transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_error

SnapMirror error

Name	Type	Description
arguments	array[string]	Arguments present in the error message encountered.
code	string	Error code
message	string	Error message

snapmirror_relationship

SnapMirror relationship information. The SnapMirror relationship can be either "async" or "sync" based on the type of SnapMirror policy associated with the relationship. The source and destination endpoints of a SnapMirror relationship must be of the same type, for example, if the source endpoint is a FlexVol volume then the destination endpoint must be a FlexVol volume.
The SnapMirror policy type "async" can be used when the SnapMirror relationship has FlexVol volume or FlexGroup volume or SVM as the endpoint. The SnapMirror policy type "sync" can be used when the SnapMirror relationship has FlexVol volume as the endpoint. The SnapMirror policy type "sync" with "sync_type" as "automated_failover" can be used when the SnapMirror relationship has Consistency Group as the endpoint.

Name	Type	Description
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.

Name	Type	Description
create_destination	snapmirror_destination_creation	Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-SVM-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-SVM-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-SVM-name:/cg/consistency-group-name> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
exported_snapshot	string	Snapshot exported to clients on destination.
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?

Name	Type	Description
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship's policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.

Name	Type	Description
policy	policy	Basic policy information of the relationship.
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore	boolean	Set to true to create a relationship for restore. To trigger restore-transfer, use transfers POST on the restore relationship. SnapMirror relationships with the policy type "async" can be restored. SnapMirror relationships with the policy type "sync" cannot be restored.

Name	Type	Description
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying

Name	Type	Description
svmdr_volumes	array[svmdr_volumes]	Specifies the list of constituent FlexVol volumes and FlexGroup volumes for an SVM DR SnapMirror relationship. FlexGroup constituents are not considered.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a SnapMirror relationship

DELETE `/snapmirror/relationships/{uuid}`

Introduced In: 9.6

Deletes a SnapMirror relationship.

Important notes

- The "destination_only", "source_only", and "source_info_only" flags are mutually exclusive. If no flag is specified, the relationship is deleted from both the source and destination and all common snapshots between the source and destination are also deleted.
- For a restore relationship, the call must be executed on the cluster containing the destination endpoint without specifying the destination_only, source_only, or source_info_only parameters.
- Additionally, ensure that there are no ongoing transfers on a restore relationship before calling this API.
- The "failover", "force-failover" and "failback" query parameters are only applicable for SVM-DR SnapMirror relationships.
- When a SnapMirror relationship associated with a pair of source and destination Consistency Groups is deleted, the corresponding Consistency Groups on the source and destination clusters are not automatically deleted and remain in place.
- The "delete_lun_maps_in_destination" query parameter is applicable only for SnapMirror active sync relationships.
- The "unmap_namespace" query parameter is applicable only for NVMe SnapMirror active sync relationships.

Related ONTAP commands

- `snapmirror delete`
- `snapmirror release`

Examples

The following examples show how to delete the relationship from both the source and destination, the destination only, and the source only.

Deleting the relationship from both the source and destination. This API must be run on the cluster containing the destination endpoint.

```
 DELETE "/api/snapmirror/relationships/4512b2d2-fd60-11e8-8929-
005056bbfe52"
```

Deleting the relationship on the destination only. This API must be run on the cluster containing the destination endpoint.

```
 DELETE "/api/snapmirror/relationships/fd1e0697-02ba-11e9-acc7-
005056a7697f/?destination_only=true"
```

Deleting the relationship on the source only. This API must be run on the cluster containing the source endpoint.

```
 DELETE "/api/snapmirror/relationships/93e828ba-02bc-11e9-acc7-
005056a7697f/?source_only=true"
```

Deleting the source information only. This API must be run on the cluster containing the source endpoint. This does not delete the common snapshots between the source and destination.

```
 DELETE "/api/snapmirror/relationships/caf545a2-fc60-11e8-aa13-
005056a707ff/?source_info_only=true"
```

Deleting the relationship from source and destination cluster along with deleting the LUN maps for the volumes of the CG in destination cluster. This API must be run on the cluster containing the destination endpoint.

```
 DELETE "/api/snapmirror/relationships/feda8f5e-e29e-11ed-94aa-
005056a78ce2/?delete_lun_maps_in_destination=true"
```

Deleting the relationship from destination cluster along with deleting the namespace maps for the volumes of the CG in destination cluster. This API must be run on the cluster containing the destination endpoint.

```
 DELETE "/api/snapmirror/relationships/feda8f5e-e29e-11ed-94aa-
005056a78ce2/?unmap_namespace=true"
```

Learn more

- DOC /snapmirror/relationships

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror relationship UUID
destination_only	boolean	query	False	Deletes a relationship on the destination only. This parameter is applicable only when the call is executed on the cluster that contains the destination endpoint.
source_only	boolean	query	False	Deletes a relationship on the source only. This parameter is applicable only when the call is executed on the cluster that contains the source endpoint. In the case of a relationship that uses SnapMirror policy of type 'continuous', this parameter is used to delete the source end of the relationship while ignoring errors when the destination endpoint is not reachable.

Name	Type	In	Required	Description
source_info_only	boolean	query	False	Deletes relationship information on the source only. This parameter is applicable only when the call is executed on the cluster that contains the source endpoint.
delete_lun_maps_in_destination	boolean	query	False	Deletes LUN mapping for the volumes of the CG in destination. • Introduced in: 9.14 • Default value:
unmap_namespace	boolean	query	False	Deletes namespace mapping and then deletes the subsystems. • Introduced in: 9.17 • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303825	Could not retrieve information for the SnapMirror policy type
13303814	Could not retrieve the source or destination SVM UUID
13303815	Could not retrieve information for the peer cluster
13303822	SnapMirror release has failed
13303813	SnapMirror release was successful but delete has failed
13303854	Cleanup of restore relationship failed
13303855	DELETE call on a restore relationship does not support the given flags
13303865	Deleting the specified SnapMirror policy is not supported.
6619715	Modification of relationship is in progress. Retry the command after a few minutes.

Error code	Description
6621470	SnapMirror delete failed on the relationship because "unmap-namespace" is not set. Set the "unmap-namespace" to true for NVMe SnapMirror active sync relationships.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a SnapMirror relationship

GET `/snapmirror/relationships/{uuid}`

Introduced In: 9.6

Retrieves a SnapMirror relationship.

Related ONTAP commands

- `snapmirror show`
- `snapmirror list-destinations`

Expensive properties

- `source.consistency_group_volumes.name`
- `destination.consistency_group_volumes.name`

Example

```
GET "/api/snapmirror/relationships/caf545a2-fc60-11e8-aa13-005056a707ff/"
```

Learn more

- DOC /snapmirror/relationships

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror relationship UUID
list_destinations_only	boolean	query	False	Set to true to show relationships from the source only.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.

Name	Type	Description
consistency_group_failover	snapmirror_consistency_group_failover	SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation. • Introduced in: 9.8 • readOnly: 1
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
exported_snapshot	string	Snapshot exported to clients on destination.

Name	Type	Description
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship’s policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.

Name	Type	Description
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.
policy	policy	Basic policy information of the relationship.
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".

Name	Type	Description
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore	boolean	Set to true to create a relationship for restore. To trigger restore-transfer, use transfers POST on the restore relationship. SnapMirror relationships with the policy type "async" can be restored. SnapMirror relationships with the policy type "sync" cannot be restored.
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying "create_destination" property, set

Name	Type	Description
svmdr_volumes	array[svmdr_volumes]	Specifies the list of constituent FlexVol volumes and FlexGroup volumes for an SVM DR SnapMirror relationship. FlexGroup constituents are not considered.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "backoff_level": "medium",
  "consistency_group_failover": {
    "error": {
      "arguments": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "code": "4",
      "message": "entry doesn't exist"
    },
    "state": "string",
    "status": {
      "code": "string",
      "message": "string"
    },
    "type": "string"
  },
  "destination": {
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "consistency_group_volumes": [
      {
        "name": "volume1"
      }
    ],
    "luns": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
```

```
          }
        },
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "path": "svm1:volume1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    },
    "exported_snapshot": "string",
    "group_type": "consistency_group",
    "identity_preservation": "string",
    "io_serving_copy": "C1_sti85-vsim-ucs209a_cluster, C1_sti85-vsim-
ucs209c_cluster",
    "lag_time": "PT8H35M42S",
    "last_transfer_network_compression_ratio": 61,
    "last_transfer_type": "initialize",
    "master_bias_activated_site": "C1_sti85-vsim-ucs209a_cluster",
    "policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "Asynchronous",
      "type": "string",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    },
    "preferred_site": "C1_sti85-vsim-ucs209a_cluster",
    "restore_to_snapshot": "string",
    "source": {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
    },
    "consistency_group_volumes": [
      {
        "name": "volume1"
      }
    ],
    "luns": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "path": "svm1:volume1",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "state": "snapmirrored",
  "svmdr_volumes": [
    {
      "name": "volume1"
    }
  ],
  "throttle": 0,
  "total_transfer_bytes": 1098210312,
  "total_transfer_duration": "PT3M21S",
  "transfer": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "end_time": "2020-12-02 21:36:19 -0500",
    "last_updated_time": "2023-09-14 18:39:19 -0400",
    "state": "string",
    "total_duration": "PT28M41S",
    "type": "initialize",
```

```
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "transfer_schedule": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "unhealthy_reason": [
    {
      "arguments": [],
      "code": "6621444",
      "message": "Failed to complete update operation on one or more
item relationships."
    },
    {
      "arguments": [],
      "code": "6621445",
      "message": "Group Update failed"
    }
  ],
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303825	Could not retrieve information for the SnapMirror policy type
13303817	Unknown value for the Snapmirror State

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

SnapMirror Consistency Group failover error message.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

status

Name	Type	Description
code	string	Status code
message	string	SnapMirror Consistency Group failover status.

snapmirror_consistency_group_failover

SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation.

Name	Type	Description
error	error	SnapMirror Consistency Group failover error message.
state	string	SnapMirror Consistency Group failover state.
status	status	
type	string	SnapMirror Consistency Group failover type.

bucket_retention

Specifies the retention-mode and default retention period configured on the destination bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

Name	Type	Description
mode	string	The lock mode of the bucket. compliance ‐ A SnapLock Compliance (SLC) bucket provides the highest level of WORM protection and an administrator cannot destroy a compliance bucket if it contains unexpired WORM objects. governance ‐ An administrator can delete a Governance bucket. no_lock ‐ Indicates the bucket does not support object locking.

storage_service

Name	Type	Description
enabled	boolean	This property indicates whether to create the destination endpoint using storage service. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.7 • x-nullable: true
enforce_performance	boolean	Optional property to enforce storage service performance on the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • Default value: 1 • Introduced in: 9.7 • x-nullable: true

Name	Type	Description
name	string	Optional property to specify the storage service name for the destination endpoint. This property is considered when the property "create_destination.storage_service.enabled" is set to "true". When the property "create_destination.storage_service.enabled" is set to "true" and the "create_destination.storage_service.name" for the endpoint is not specified, then ONTAP selects the highest storage service available on the cluster to provision the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • enum: ["extreme", "performance", "value"] • Introduced in: 9.6 • x-nullable: true

tiering

Name	Type	Description
policy	string	Optional property to specify the destination endpoint’s tiering policy when "create_destination.tiering.supported" is set to "true". This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property determines whether the user data blocks of the destination endpoint in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of the destination endpoint volume blocks increases if they are accessed frequently and decreases when they are not. all ‐ This policy allows tiering of both destination endpoint snapshots and the user transferred data blocks to the cloud store as soon as possible by ignoring the temperature on the volume blocks. This tiering policy is not applicable for Consistency Group destination endpoints or for synchronous relationships. auto ‐ This policy allows tiering of both destination endpoint snapshots and the active file system user data to the cloud store none ‐ Destination endpoint volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the destination endpoint volume snapshots not associated with the active file system. The default tiering policy is "snapshot_only" for a FlexVol volume and "none" for a FlexGroup volume. This property is supported for Unified ONTAP destination endpoints only. • enum: ["all", "auto", "none", "snapshot_only"] Introduced in: 9.6 x-nullable: true

Name	Type	Description
supported	boolean	Optional property to enable provisioning of the destination endpoint volumes on FabricPool aggregates. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. Only FabricPool aggregates are used if this property is set to "true" and only non FabricPool aggregates are used if this property is set to "false". Tiering support for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. Note that in order to tier data, not only do the destination endpoint volumes need to support tiering by using FabricPools, the "create_destination.tiering.policy" must not be "none". A destination endpoint that uses FabricPools but has a tiering "policy" of "none" supports tiering but will not tier any data. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.6 • x-nullable: true

snapmirror_destination_creation

Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-svm-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-svm-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-svm-name:> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either from the source or the destination cluster. For an SVM destination endpoint, the

properties in this object can be specified from the destination cluster only. This object is not supported for non ONTAP endpoints. While protecting a S3 Bucket, the optional "size" property can be used to create ONTAP S3 Bucket destination endpoint of the specified size.</destination-svm-name:></destination-svm-name:></destination-svm-name:dp-volume-name>

Name	Type	Description
bucket_retention	bucket_retention	Specifies the retention-mode and default retention period configured on the destination bucket.
enabled	boolean	Optional property to create the destination endpoint when establishing a SnapMirror relationship. It is assumed to be "false" if no other property is set and assumed to be "true" if any other property is set.
size	integer	Optional property to specify the size of destination endpoint in bytes. This property is applicable only to ONTAP S3 Bucket endpoints. The minimum size for S3 bucket is 80MB and maximum size is 64TB. If not specified, system will create destination with default size of 800GB. • Introduced in: 9.10 • x-nullable: true
snapshot_locking_enabled	boolean	Optional property to create the destination endpoint with snapshot locking enabled when establishing a SnapMirror relationship. This property is applicable to FlexVol volumes and FlexGroup volumes.
storage_service	storage_service	
tiering	tiering	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination

SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

policy

Basic policy information of the relationship.

Name	Type	Description
_links	_links	
name	string	Name of the SnapMirror policy.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

snapmirror_source_endpoint

Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.14 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

svmdr_volumes

Name	Type	Description
name	string	The name of the volume.

transfer

Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.

Name	Type	Description
_links	_links	
bytes_transferred	integer	Total bytes transferred in the current or last successful transfer.
end_time	string	End time of the last transfer.
last_updated_time	string	Last updated time of the bytes transferred in the current transfer.
state	string	
total_duration	string	Elapsed time to transfer all snapshots for the last successful transfer.
type	string	Specifies the operation type of the current transfer on the relationship. The *initialize* transfer occurs when the relationship state changes from "uninitialized" to "snapmirrored" or "in_sync". The *update* transfer occurs when snapshots are being transferred from the source endpoint to the destination endpoint as part of a scheduled or manual update. The *resync* transfer occurs when the relationship state changes from "broken_off" to "snapmirrored" or "in_sync". The *restore* transfer occurs when a snapshot is being restored from a destination endpoint to another endpoint.
uuid	string	Transfer UUID. This property is applicable only for active transfers.

transfer_schedule

Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.

Name	Type	Description
_links	_links	
name	string	Job schedule name

Name	Type	Description
uuid	string	Job schedule UUID

snapmirror_error

SnapMirror error

Name	Type	Description
arguments	array[string]	Arguments present in the error message encountered.
code	string	Error code
message	string	Error message

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a SnapMirror relationship

PATCH `/snapmirror/relationships/{uuid}`

Introduced In: 9.6

Updates a SnapMirror relationship. This API is used to initiate SnapMirror operations such as "initialize", "resync", "break", "quiesce", and "resume" by specifying the appropriate value for the "state" field. It is also used to modify the SnapMirror policy associated with the specified relationship. Additionally, a SnapMirror relationship can be failed over to the destination endpoint or a failed over SnapMirror relationship can be failed back to the original state or a SnapMirror relationship direction can be reversed using this API. This API can also be used to expand the SnapMirror active sync relationship with the specified source and destination volumes.

To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or "in_sync" for relationships with a policy of type "sync".

To break the relationship or to failover to the destination endpoint and start serving data from the destination endpoint, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror

relationships with the policy type as "sync" and sync_type as "automated_failover" cannot be "broken_off".

To resync the broken relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or "in_sync" for relationships with a policy of type "sync".

To failback the failed over relationship and start serving data from the source endpoint, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or "in_sync" for relationships with a policy of type "sync" and set the query flag "failback" as "true". SnapMirror relationships with the policy type as "sync" and sync_type as "automated_failover" can be in "broken_off" state due to a failed attempt of automated SnapMirror failover operation.

To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and sync_type as "automated_failover" cannot be "paused".

To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or "in_sync" for relationships with a policy of type "sync".

To reverse the direction of the relationship, PATCH the "source.path" with the destination endpoint and the "destination.path" with the source endpoint and the relationship state to "snapmirrored" for relationships with a policy of type "async" or "in_sync" for relationships with a policy of type "sync". For relationships with a policy of type "async" and relationship state as "snapmirrored", stop IO on the source endpoint and perform a SnapMirror transfer POST operation before reversing the direction of the relationship to prevent any loss of data.

The values "in_sync", "out_of_sync", and "synchronizing" are only applicable to relationships with a policy of type "sync".

When "transfer_schedule" is specified along with "state" during PATCH, first the schedule is modified on the relationship and then the respective SnapMirror operation is initiated. The "transfer_schedule" specified is used to update asynchronous relationships.

When "throttle" is specified along with "state" during PATCH, first the throttle is modified on the relationship, which will be used by any upcoming transfers and then the respective SnapMirror operation is initiated. If the SnapMirror operation initiated a transfer then it will also use the new throttle. If "throttle" needs to be applied for a specific transfer use SnapMirror Transfer REST API.

For SnapMirror active sync relationships, when "consistency_group_volumes" is specified during PATCH, first the existing FlexVol volume relationship is deleted and released and then the volumes are added to the SnapMirror active sync relationship.

Examples

Related ONTAP commands

- `snapmirror modify`
- `snapmirror initialize`
- `snapmirror resync`
- `snapmirror break`
- `snapmirror quiesce`
- `snapmirror resume`

Important notes

- The property "transfer_schedule" if set on a SnapMirror relationship overrides the "transfer_schedule" set on the policy being used with the SnapMirror relationship.
- The property "throttle" if set on a SnapMirror relationship overrides the "throttle" set on the policy being used with the SnapMirror relationship.
- The properties "transfer_schedule" and "throttle" are not supported when "failback" is set to "true".
- The properties "transfer_schedule" and "throttle" are not supported when "failover" is set to "true".
- The properties "transfer_schedule" and "throttle" are not supported when "force_failover" is set to "true".
- The properties "transfer_schedule" and "throttle" are not supported when the direction of the relationship is being reversed.
- To remove a transfer_schedule on a SnapMirror relationship set the "transfer_schedule" to null (no-quotes) during SnapMirror relationship PATCH.
- The property "identity_preservation" value can be changed from a higher "identity_preservation" threshold value to a lower "identity_preservation" threshold value but not vice-versa. For example, the threshold value of the "identity_preservation" property can be changed from "full" to "exclude_network_config", but cannot be increased from "exclude_network_and_protocol_config" to "exclude_network_config" to "full". The threshold value of the "identity_preservation" cannot be changed to "exclude_network_and_protocol_config" for IDP SVMDR.
- The property "backoff_level" is only applicable for FlexVol SnapMirror relationships.

Examples

The following examples show how to perform the SnapMirror "resync", "initialize", "resume", "quiesce", and "break" operations. In addition, a relationship can be failed over to the destination endpoint and start serving data from the destination endpoint. A failed over relationship can be failed back to the source endpoint and serve data from the source endpoint. Also a relationship can be reversed by making the source endpoint as the new destination endpoint and the destination endpoint as the new source endpoint.

To update an associated SnapMirror policy.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"policy": { "name" : "MirrorAndVaultDiscardNetwork"}}'
```

To perform SnapMirror "resync" for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored"}'
```

To perform SnapMirror "initialize" for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored"}'
```

To perform SnapMirror "resume" for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored"}'
```

To perform SnapMirror "quiesce" for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff" '{"state":"paused"}'
```

To perform SnapMirror "break" for an asynchronous SnapMirror relationship. This operation does a failover to the destination endpoint. After a the failover, data can then be served from the destination endpoint.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff" '{"state":"broken_off"}'
```

To forcefully failover to the destination endpoint and start serving data from the destination endpoint.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/?force=true" '{"state":"broken_off"}'
```

To failback to the source endpoint and start serving data from the source endpoint for an asynchronous relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/?failback=true" '{"state":"snapmirrored"}'
```

To failback to the source endpoint and start serving data from the source endpoint for a synchronous relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/?failback=true" '{"state":"in_sync"}'
```

To reverse the direction of an asynchronous relationship, that is, make the source endpoint as the new destination endpoint and make the destination endpoint as the new source endpoint.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"source": {"path": "dst_svm:dst_vol"}, "destination":
{"path": "src_svm:src_vol"}, "state": "snapmirrored"}'
```

To reverse the direction of a synchronous relationship, that is, make the source endpoint as the new destination endpoint and make the destination endpoint as the new source endpoint.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"source": {"path": "dst_svm:dst_vol"}, "destination":
{"path": "src_svm:src_vol"}, "state": "in_sync"}'
```

Updating SnapMirror transfer_schedule and throttle for an asynchronous SnapMirror relationship. Transfer_schedule can be specified as UUID or name or both.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"transfer_schedule":{"uuid":"817500fa-092d-44c5-9c10-
7b54f7b2f20a", "name":"5min"}, "throttle":100}'
```

Removing the SnapMirror transfer_schedule for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"transfer_schedule":{"uuid":null, "name":null}}'
```

Removing the SnapMirror throttle for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"throttle":0}'
```

To perform SnapMirror "resync" and update the SnapMirror transfer_schedule for an asynchronous SnapMirror relationship. First the transfer_schedule is modified and then the resync transfer is initiated.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored",
transfer_schedule":{"uuid":"817500fa-092d-44c5-9c10-7b54f7b2f20a",
"name":"5min"}}'
```

To perform SnapMirror "initialize" and update the SnapMirror throttle for an asynchronous SnapMirror relationship. First the throttle is modified and then the initialize transfer is initiated. The initialize transfer will use this new throttle.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored", "throttle":100}'
```

To perform SnapMirror "resync" and update the SnapMirror throttle for an asynchronous SnapMirror relationship. First the throttle is modified and then the resync transfer is initiated. The resync transfer will use this new throttle.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored", "throttle":100}'
```

To perform a SnapMirror active sync or Asynchronous Consistency Group expansion.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{ "source" :
{"consistency_group_volumes":[{"name":"vol"}]}, "destination" :
{"consistency_group_volumes":[{"name":"voldp"}]} }'
```

Updating SnapMirror backoff_level for an asynchronous SnapMirror relationship.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"backoff_level": "none"}'
```

To perform SnapMirror "initialize" and update the SnapMirror backoff_level for an asynchronous SnapMirror relationship. First the backoff_level is modified and then the initialize transfer is initiated. The initialize transfer will use this new backoff_level.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored", "backoff_level": "medium"}'
```

To perform SnapMirror "resync" and update the SnapMirror backoff_level for an asynchronous SnapMirror relationship. First the backoff_level is modified and then the resync transfer is initiated. The resync transfer will use this new backoff_level.

```
 PATCH "/api/snapmirror/relationships/98bb2608-fc60-11e8-aa13-
005056a707ff/" '{"state":"snapmirrored", "backoff_level": "medium"}'
```

Learn more

- DOC /snapmirror/relationships

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	SnapMirror relationship UUID

Name	Type	In	Required	Description
failover	boolean	query	False	If this parameter is set, validation and failover will occur to the SVM-DR SnapMirror relationship destination endpoint. Any other fields specified with this parameter will be ignored. This parameter is supported only for SVM-DR SnapMirror relationships. • Introduced in: 9.7 • Default value:
force-failover	boolean	query	False	If this parameter is set, failover will occur to the SVM-DR SnapMirror relationship destination endpoint, overriding the validation errors. Any other fields specified with this parameter will be ignored. This parameter is supported only for SVM-DR SnapMirror relationships. • Introduced in: 9.7 • Default value:

Name	Type	In	Required	Description
force	boolean	query	False	If this parameter is set while specifying the state as "broken_off", indicates a forced failover overriding the validation errors. • Introduced in: 9.8 • Default value:
failback	boolean	query	False	If this parameter is set while specifying the state as "snapmirrored", indicates recovery of the failed over SnapMirror relationship by preserving the data written on the destination endpoint when the SnapMirror relationship was in failed over state. This flag is only applicable to SVM-DR SnapMirror relationships. • Introduced in: 9.8 • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
validate_only	boolean	query	False	Validate the operation and its parameters, without actually performing the operation. • Introduced in: 9.7

Request Body

Name	Type	Description
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
exported_snapshot	string	Snapshot exported to clients on destination.
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?

Name	Type	Description
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship's policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.
policy	policy	Basic policy information of the relationship.

Name	Type	Description
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".

Name	Type	Description
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying "create_destination" property, set

Name	Type	Description
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

Example request


```
{
  "backoff_level": "medium",
  "destination": {
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "luns": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "path": "svm1:volume1",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "exported_snapshot": "string",
  "group_type": "consistency_group",
  "identity_preservation": "string",
  "io_serving_copy": "C1_sti85-vsim-ucs209a_cluster, C1_sti85-vsim-
ucs209c_cluster",
  "lag_time": "PT8H35M42S",
  "last_transfer_network_compression_ratio": 61,
  "last_transfer_type": "initialize",
  "master_bias_activated_site": "C1_sti85-vsim-ucs209a_cluster",
  "policy": {
    "name": "Asynchronous",
    "type": "string",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "preferred_site": "C1_sti85-vsim-ucs209a_cluster",
  "restore": true,
  "restore_to_snapshot": "string",
  "source": {
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "luns": {
      "name": "/vol/volume1/lun1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "path": "svm1:volume1",
```

```
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  },
  "state": "snapmirrored",
  "throttle": 0,
  "total_transfer_bytes": 1098210312,
  "total_transfer_duration": "PT3M21S",
  "transfer": {
    "end_time": "2020-12-02 21:36:19 -0500",
    "last_updated_time": "2023-09-14 18:39:19 -0400",
    "state": "string",
    "total_duration": "PT28M41S",
    "type": "initialize",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  },
  "transfer_schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "unhealthy_reason": [
    {
      "arguments": [],
      "code": "6621444",
      "message": "Failed to complete update operation on one or more
item relationships."
    },
    {
      "arguments": [],
      "code": "6621445",
      "message": "Group Update failed"
    }
  ],
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303825	Could not retrieve information for the SnapMirror policy type
13303817	Unknown value for the SnapMirror state
13303829	Invalid state
13303830	Transient state
13303831	Invalid state for async SnapMirror relationship
13303834	Given input valid only for FlexGroup SnapMirror relationship
13303835	Given flag is valid only when PATCH state is broken_off
13303836	Given flag is valid only when PATCH state is snapmirrored or in_sync
13303818	Invalid state transition requested
13303828	Given state change is not possible for SVM SnapMirror relationship
13303833	Requested state change is not possible
13303832	SnapMirror relationship is already initialized
13303824	Quiescing the SnapMirror relationship has failed
13303826	Required environment variables are not set

Error code	Description
13303827	Internal Error
13303823	Quiesce operation timed out
13303821	Invalid SnapMirror policy name/UUID
13303819	Could not retrieve SnapMirror policy information
13303851	Cannot modify attributes of SnapMirror restore relationship
13303816	Could not retrieve the state or status values for the relationship. Wait a few minutes and try the operation again
13303837	Given flags are valid only if SnapMirror state change is requested
6619546	Destination must be a dp volume
13303808	Transition to broken_off state failed
13303809	Transition to paused state failed
13303810	Transition to snapmirrored state failed
13303811	Transition from paused state failed
13303820	SnapMirror policy, transfer_schedule, and throttle, if specified were successfully updated, state transition failed
13303856	SVM is not configured with any data protocol
13303857	SVM is not configured with any network interface
13303858	Internal error. Failed to check LIF and protocols details for SVM
13303859	Internal error. SVM Failover operation failed. SVM operational state is unavailable.
13303865	Modifying the specified SnapMirror policy is not supported.
13303866	Cannot use the specified policy to modify the policy of the relationship.
13303867	Modifying the policy of an async-mirror or a vault relationship is not supported.
13303884	LIF and protocols details are configured incorrectly for SVM.
13303996	The source and destination clusters both have a policy with the same name, but they have different properties.
13304062	Cannot reverse the direction of a SnapMirror DP relationship when the source cluster version is earlier than the destination cluster version.

Error code	Description
13304070	Remote peer cluster requires the dp_rest_support capability to support reversing the direction of a DP relationship.
13304071	Failed to access capabilities on remote cluster.
13304080	Specified uuid and name do not match.
13304081	Modifying a property during the operation is not supported.
13304082	The specified properties are mutually exclusive.
13304083	The specified property is not supported because all nodes in the cluster are not capable of supporting the property.
13304086	Reversing the direction of a SnapMirror relationship associated with a policy containing the property create_snapshot_on_source set to false is not supported.
6619715	Modification of relationship is in progress. Retry the command after a few minutes.
6619699	Schedule not found.
13304108	Schedule not found in the Administrative SVM or the SVM for the relationship.
13304111	The SnapMirror active sync relationship consistency groups are nested. Expanding an SnapMirror active sync relationship with a pre-existing DP volume is only supported for flat consistency groups.
6621458	The destination Consistency Group is the source of a SnapMirror Synchronous (SM-S) relationship. Sources of SM-S relationships cannot be the destination of any other SnapMirror relationship.
6621782	A property of the policy is not valid for relationships between these endpoints.

| 13304120 | Values specified for the source.path and destination.path properties do not match the relationship's source.path or destination.path properties.
13304003	IntraCluster flip operation is not supported.
6621125	The policy is not valid for relationships with FlexGroup volume endpoints. Only policies without snapshot creation schedules are supported for these relationships.
13304093	The property specified is not supported for the specified relationships.
6622077	The expand operation has failed on the SnapMirror active sync relationship with specified destination path.

6619720	Relationship information has been updated and is being propagated. Wait a few minutes and try the operation again.

13304156	Either use state as broken-off or failover as true for SVM-DR fail-over operation.
13304159	Could not retrieve the state or status values for the relationship. Wait a few minutes and try the operation again. If the error persists, address the error condition shown.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

SnapMirror Consistency Group failover error message.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

status

Name	Type	Description
code	string	Status code
message	string	SnapMirror Consistency Group failover status.

snapmirror_consistency_group_failover

SnapMirror Consistency Group failover information. The SnapMirror Consistency Group failover can be a planned or an unplanned operation. Only active SnapMirror Consistency Group failover operation progress can be monitored using this object. In case of an error during the failover operation, the property "consistency_group_failover.error" holds the reason for the error. ONTAP automatically retries any failed SnapMirror Consistency Group failover operation.

Name	Type	Description
state	string	SnapMirror Consistency Group failover state.
status	status	
type	string	SnapMirror Consistency Group failover type.

bucket_retention

Specifies the retention-mode and default retention period configured on the destination bucket.

Name	Type	Description
default_period	string	Specifies the default retention period that is applied to objects while committing them to the WORM state without an associated retention period. The retention period can be in years, or days. The retention period value represents a duration and must be specified in the ISO-8601 duration format. A period specified for years and days is represented in the ISO-8601 format as "P<num>Y" and "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. The period string must contain only a single time element that is, either years, or days. A duration which combines different periods is not supported, for example "P1Y10D" is not supported.</num></num>

storage_service

Name	Type	Description
enabled	boolean	This property indicates whether to create the destination endpoint using storage service. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.7 • x-nullable: true
enforce_performance	boolean	Optional property to enforce storage service performance on the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • Default value: 1 • Introduced in: 9.7 • x-nullable: true

Name	Type	Description
name	string	Optional property to specify the storage service name for the destination endpoint. This property is considered when the property "create_destination.storage_service.enabled" is set to "true". When the property "create_destination.storage_service.enabled" is set to "true" and the "create_destination.storage_service.name" for the endpoint is not specified, then ONTAP selects the highest storage service available on the cluster to provision the destination endpoint. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property is supported for Unified ONTAP destination endpoints only. • enum: ["extreme", "performance", "value"] • Introduced in: 9.6 • x-nullable: true

tiering

Name	Type	Description
policy	string	Optional property to specify the destination endpoint’s tiering policy when "create_destination.tiering.supported" is set to "true". This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. This property determines whether the user data blocks of the destination endpoint in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of the destination endpoint volume blocks increases if they are accessed frequently and decreases when they are not. all ‐ This policy allows tiering of both destination endpoint snapshots and the user transferred data blocks to the cloud store as soon as possible by ignoring the temperature on the volume blocks. This tiering policy is not applicable for Consistency Group destination endpoints or for synchronous relationships. auto ‐ This policy allows tiering of both destination endpoint snapshots and the active file system user data to the cloud store none ‐ Destination endpoint volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the destination endpoint volume snapshots not associated with the active file system. The default tiering policy is "snapshot_only" for a FlexVol volume and "none" for a FlexGroup volume. This property is supported for Unified ONTAP destination endpoints only. • enum: ["all", "auto", "none", "snapshot_only"] Introduced in: 9.6 x-nullable: true

Name	Type	Description
supported	boolean	Optional property to enable provisioning of the destination endpoint volumes on FabricPool aggregates. This property is applicable to FlexVol volume, FlexGroup volume, and Consistency Group endpoints. Only FabricPool aggregates are used if this property is set to "true" and only non FabricPool aggregates are used if this property is set to "false". Tiering support for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. Note that in order to tier data, not only do the destination endpoint volumes need to support tiering by using FabricPools, the "create_destination.tiering.policy" must not be "none". A destination endpoint that uses FabricPools but has a tiering "policy" of "none" supports tiering but will not tier any data. This property is supported for Unified ONTAP destination endpoints only. • Introduced in: 9.6 • x-nullable: true

snapmirror_destination_creation

Use this object to provision the destination endpoint when establishing a SnapMirror relationship for a FlexVol volume, FlexGroup volume, SVM, Consistency Group or ONTAP S3 Bucket. Given a source endpoint, the destination endpoint is provisioned in the SVM specified in the "destination.path" property. While protecting an SVM, the SVM destination endpoint can only be provisioned on the local cluster. To provision the SVM destination endpoint use the optional "source.cluster.name" property to specify the remote cluster name or use the optional "source.cluster.uuid" property to specify the remote cluster UUID. When "create_destination.enabled" option is specified while making a POST for a SnapMirror relationship, the relationship can be automatically initialized by setting the "state" either to "snapmirrored" when the policy is of type "async" or to "in_sync" when the policy is of type "sync". The "destination.path" property must specify the destination endpoint path. For example, for FlexVol volume and FlexGroup volume, the "destination.path" can be specified as <destination-svm-name:dp-volume-name>, for SVM data protection, the "destination.path" must be specified as <destination-svm-name:>, and for Consistency Group, the "destination.path" must be specified as <destination-svm-name:> along with the "destination.consistency_group_volumes" or "destination.luns" property to indicate the list of destination volumes or LUNs of type "DP" in the Consistency Group. For a FlexVol volume, a FlexGroup volume, Consistency Group or a Bucket destination endpoint, the properties in this object can be specified either from the source or the destination cluster. For an SVM destination endpoint, the

properties in this object can be specified from the destination cluster only. This object is not supported for non ONTAP endpoints. While protecting a S3 Bucket, the optional "size" property can be used to create ONTAP S3 Bucket destination endpoint of the specified size.</destination-svm-name:></destination-svm-name:></destination-svm-name:dp-volume-name>

Name	Type	Description
bucket_retention	bucket_retention	Specifies the retention-mode and default retention period configured on the destination bucket.
enabled	boolean	Optional property to create the destination endpoint when establishing a SnapMirror relationship. It is assumed to be "false" if no other property is set and assumed to be "true" if any other property is set.
size	integer	Optional property to specify the size of destination endpoint in bytes. This property is applicable only to ONTAP S3 Bucket endpoints. The minimum size for S3 bucket is 80MB and maximum size is 64TB. If not specified, system will create destination with default size of 800GB. • Introduced in: 9.10 • x-nullable: true
snapshot_locking_enabled	boolean	Optional property to create the destination endpoint with snapshot locking enabled when establishing a SnapMirror relationship. This property is applicable to FlexVol volumes and FlexGroup volumes.
storage_service	storage_service	
tiering	tiering	

cluster

Name	Type	Description
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

policy

Basic policy information of the relationship.

Name	Type	Description
name	string	Name of the SnapMirror policy.
type	string	
uuid	string	Unique identifier of the SnapMirror policy.

snapmirror_source_endpoint

Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	

Name	Type	Description
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.14 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

svmdr_volumes

Name	Type	Description
name	string	The name of the volume.

transfer

Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.

Name	Type	Description
bytes_transferred	integer	Total bytes transferred in the current or last successful transfer.
end_time	string	End time of the last transfer.
last_updated_time	string	Last updated time of the bytes transferred in the current transfer.
state	string	

Name	Type	Description
total_duration	string	Elapsed time to transfer all snapshots for the last successful transfer.
type	string	Specifies the operation type of the current transfer on the relationship. The *initialize* transfer occurs when the relationship state changes from "uninitialized" to "snapmirrored" or "in_sync". The *update* transfer occurs when snapshots are being transferred from the source endpoint to the destination endpoint as part of a scheduled or manual update. The *resync* transfer occurs when the relationship state changes from "broken_off" to "snapmirrored" or "in_sync". The *restore* transfer occurs when a snapshot is being restored from a destination endpoint to another endpoint.
uuid	string	Transfer UUID. This property is applicable only for active transfers.

transfer_schedule

Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapmirror_error

SnapMirror error

Name	Type	Description
arguments	array[string]	Arguments present in the error message encountered.

Name	Type	Description
code	string	Error code
message	string	Error message

snapmirror_relationship

SnapMirror relationship information. The SnapMirror relationship can be either "async" or "sync" based on the type of SnapMirror policy associated with the relationship. The source and destination endpoints of a SnapMirror relationship must be of the same type, for example, if the source endpoint is a FlexVol volume then the destination endpoint must be a FlexVol volume.
The SnapMirror policy type "async" can be used when the SnapMirror relationship has FlexVol volume or FlexGroup volume or SVM as the endpoint. The SnapMirror policy type "sync" can be used when the SnapMirror relationship has FlexVol volume as the endpoint. The SnapMirror policy type "sync" with "sync_type" as "automated_failover" can be used when the SnapMirror relationship has Consistency Group as the endpoint.

Name	Type	Description
backoff_level	string	Specifies the SnapMirror backoff level due to Client Ops for FlexVol SnapMirror relationships.
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6

Name	Type	Description
exported_snapshot	string	Snapshot exported to clients on destination.
group_type	string	Specifies the group type of the top level SnapMirror relationship. The volume relationships are shown as *none*, the SVMDR relationships are shown as *svm_dr*, the Consistency Group relationships are shown as *consistency_group*, and the FlexGroup volume relationships are shown as *flexgroup*.
healthy	boolean	Is the relationship healthy?
identity_preservation	string	Specifies which configuration of the source SVM is replicated to the destination SVM. This property is applicable only for SVM data protection with "async" policy type. This "identity_preservation" overrides the "identity_preservation" set on the SnapMirror relationship's policy.
io_serving_copy	string	Specifies the sites serving I/O for the SnapMirror active sync relationship.
lag_time	string	Time since the exported snapshot was created.
last_transfer_network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled for the last successful transfer.

Name	Type	Description
last_transfer_type	string	Specifies the operation type of the last transfer that occurred on the relationship. The *initialize* transfer occurs when the relationship state changes from uninitialized to snapmirrored or in_sync. The *update* transfer occurs when the snapshots are transferred from the source endpoint to the destination endpoint as part of scheduled or manual update. The *resync* transfer occurs when the relationship state changes from broken_off to snapmirrored or in_sync. The *restore* transfer occurs when the snapshot is restored from a destination endpoint to another endpoint.
master_bias_activated_site	string	Specifies the Master Bias Activated Site for the SnapMirror active sync relationship.
policy	policy	Basic policy information of the relationship.
preferred_site	string	Specifies the Primary Site of the SnapMirror active sync relationship.
preserve	boolean	Set to true on resync to preserve snapshots on the destination that are newer than the latest common snapshot. This property is applicable only for relationships with FlexVol volume or FlexGroup volume endpoints and when the PATCH state is being changed to "snapmirrored".
quick_resync	boolean	Set to true to reduce resync time by not preserving storage efficiency. This property is applicable only for relationships with FlexVol volume endpoints and SVMDR relationships when the PATCH state is being changed to "snapmirrored".

Name	Type	Description
recover_after_break	boolean	Set to true to recover from a failed SnapMirror break operation on a FlexGroup volume relationship. This restores all destination FlexGroup constituent volumes to the latest snapshot, and any writes to the read-write constituents are lost. This property is applicable only for SnapMirror relationships with FlexGroup volume endpoints and when the PATCH state is being changed to "broken_off".
restore_to_snapshot	string	Specifies the snapshot to restore to on the destination during the break operation. This property is applicable only for SnapMirror relationships with FlexVol volume endpoints and when the PATCH state is being changed to "broken_off".
source	snapmirror_source_endpoint	Source endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
state	string	State of the relationship. To initialize the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". To break the relationship, PATCH the state to "broken_off" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "broken_off". To resync the relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" can be in "broken_off" state due to a failed attempt of SnapMirror failover. To pause the relationship, suspending further transfers, PATCH the state to "paused" for relationships with a policy of type "async" or "sync". SnapMirror relationships with the policy type as "sync" and "sync_type" as "automated_failover" cannot be "paused". To resume transfers for a paused relationship, PATCH the state to "snapmirrored" for relationships with a policy of type "async" or to state "in_sync" for relationships with a policy of type "sync". The entries "in_sync", "out_of_sync", "synchronizing", "expanding", and "shrinking" are only applicable to relationships with a policy of type "sync". A PATCH call on the state change only triggers the transition to the specified state. You must poll on the "state", "healthy" and "unhealthy_reason" properties using a GET request to determine if the transition is successful. To automatically initialize the relationship when specifying

Name	Type	Description
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_transfer_bytes	integer	Cumulative bytes transferred for the relationship.
total_transfer_duration	string	Indicates the cumulative duration of all transfers since the last aggregate relocation, takeover/giveback, or metrocluster switchover/switchback involving the node that hosts the relationship.
transfer	transfer	Basic information on the current transfer or the last transfer if there is no active transfer at the time of the request.
transfer_schedule	transfer_schedule	Schedule used to update asynchronous relationships. This "transfer_schedule" overrides the "transfer_schedule" set on the SnapMirror relationship's policy. To remove the "transfer_schedule", set its value to null (no-quotes). Only cron schedules are supported for SnapMirror.
unhealthy_reason	array[snapmirror_error]	Reason the relationship is not healthy. It is a concatenation of up to four levels of error messages.
uuid	string	Unique identifier of the SnapMirror relationship.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage SnapMirror relationship tranfers

SnapMirror relationships relationship.uuid transfers endpoint overview

Overview

This API is used to manage transfers on an existing SnapMirror relationship.

You can initiate SnapMirror operations such as "initialize", "update", "restore-transfer", and "abort" using this API on asynchronous SnapMirror relationship. On a synchronous SnapMirror relationship, you can initiate SnapMirror "initialize" operation. The GET for this API reports the status of both active transfers and transfers that have terminated within the past 24 hours.
For the restore relationships, the POST on transfers API triggers "restore-transfer". Successful completion of "restore" also deletes the restore relationship. If the "restore" fails, DELETE on relationships must be called to delete the restore relationship.

A transfer on an asynchronous SnapMirror relationship with Application Consistency Group endpoints expands the destination Application Consistency Group endpoint if the source Application Consistency Group endpoint is already expanded.

Retrieve ongoing SnapMirror transfers for a relationship

GET `/snapmirror/relationships/{relationship.uuid}/transfers`

Introduced In: 9.6

Retrieves the list of ongoing SnapMirror transfers for the specified relationship.

Related ONTAP commands

- `snapmirror show`

Example

```
GET "/api/snapmirror/relationships/293baa53-e63d-11e8-bff1-
005056a793dd/transfers"
```

Learn more

- DOC /snapmirror/relationships/{relationship.uuid}/transfers

Parameters

Name	Type	In	Required	Description
relationship.uuid	string	path	True	SnapMirror relationship UUID
total_duration	string	query	False	Filter by total_duration • Introduced in: 9.10
throttle	integer	query	False	Filter by throttle • Introduced in: 9.9
uuid	string	query	False	Filter by uuid
error_info.message	string	query	False	Filter by error_info.message • Introduced in: 9.10
error_info.code	integer	query	False	Filter by error_info.code • Introduced in: 9.10
last_updated_time	string	query	False	Filter by last_updated_time • Introduced in: 9.14

Name	Type	In	Required	Description
end_time	string	query	False	Filter by end_time • Introduced in: 9.10
network_compression_ratio	string	query	False	Filter by network_compression_ratio • Introduced in: 9.13
on_demand_attrs	string	query	False	Filter by on_demand_attrs • Introduced in: 9.13
relationship.destination.cluster.name	string	query	False	Filter by relationship.destination.cluster.name • Introduced in: 9.7
relationship.destination.cluster.uuid	string	query	False	Filter by relationship.destination.cluster.uuid • Introduced in: 9.7
relationship.destination.svm.name	string	query	False	Filter by relationship.destination.svm.name
relationship.destination.svm.uuid	string	query	False	Filter by relationship.destination.svm.uuid
relationship.destination.path	string	query	False	Filter by relationship.destination.path

Name	Type	In	Required	Description
relationship.destination.consistency_group_volumes.name	string	query	False	Filter by relationship.destination.consistency_group_volumes.name • Introduced in: 9.8
relationship.destination.luns.name	string	query	False	Filter by relationship.destination.luns.name • Introduced in: 9.16
relationship.destination.luns.uuid	string	query	False	Filter by relationship.destination.luns.uuid • Introduced in: 9.16
relationship.restore	boolean	query	False	Filter by relationship.restore
checkpoint_size	integer	query	False	Filter by checkpoint_size
state	string	query	False	Filter by state
bytes_transferred	integer	query	False	Filter by bytes_transferred
snapshot	string	query	False	Filter by snapshot
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snapmirror_transfer]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "bytes_transferred": 0,
      "checkpoint_size": 0,
      "end_time": "2020-12-02 21:36:19 -0500",
      "error_info": {
        "code": 6620046,
        "message": "Transfer aborted"
      },
      "last_updated_time": "2023-09-15 19:58:39 -0400",
      "network_compression_ratio": 61,
      "on_demand_attrs": "read_write_with_user_data_pull",
      "relationship": {
        "destination": {
          "cluster": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "cluster1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "consistency_group_volumes": [
            {
              "name": "volume1"
            }
          ],
          "luns": {
```

```
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "/vol/volume1/lun1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "path": "svm1:volume1",
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          }
        },
        "uuid": "d2d7ceea-ab52-11e8-855e-00505682a4c7"
      },
      "snapshot": "string",
      "state": "string",
      "storage_efficiency_enabled": true,
      "throttle": 0,
      "total_duration": "PT28M41S",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

error_info

Error information for the transfer.

Name	Type	Description
code	integer	Error code
message	string	Error message

files

Specifies a file or LUN consisting of a source_path and an optional destination_path. If not specified, the destination_path is the same as the source_path. File restore is not supported if the source_path or destination_path contains commas in its directory or file name.

Name	Type	Description
destination_path	string	
source_path	string	

options

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination

SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

relationship

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
restore	boolean	Is the relationship for restore?
uuid	string	Unique identifier of the SnapMirror relationship.

snapmirror_transfer

SnapMirror transfer information

Name	Type	Description
_links	_links	
bytes_transferred	integer	Bytes transferred
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.

Name	Type	Description
error_info	error_info	Error information for the transfer.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.
state	string	Status of the transfer. Set PATCH state to "aborted" to abort the transfer. Set PATCH state to "hard_aborted" to abort the transfer and discard the restart checkpoint. To find "queued" transfers refer to relationships GET API.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship or SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_duration	string	Elapsed transfer time.

Name	Type	Description
uuid	string	Unique identifier of the SnapMirror transfer.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Start a SnapMirror transfer operation

POST `/snapmirror/relationships/{relationship.uuid}/transfers`

Introduced In: 9.6

Starts a SnapMirror transfer operation. This API initiates a restore operation if the SnapMirror relationship is of type "restore". Otherwise, it initiates a SnapMirror "initialize" operation or "update" operation based on the current SnapMirror state.

Default property values

- `storage_efficiency_enabled` - *true*

Related ONTAP commands

- `snapmirror update`
- `snapmirror initialize`
- `snapmirror restore`

Examples

The following examples show how to perform SnapMirror "initialize", "update", and "restore" operations.

Perform SnapMirror initialize or update

```
 POST "/api/snapmirror/relationships/e4e7e130-0279-11e9-b566-
0050568e9909/transfers" '{}'
```

Perform SnapMirror initialize, update or restore with throttle value set

```
 POST "/api/snapmirror/relationships/e4e7e130-0279-11e9-b566-
0050568e9909/transfers" '{"throttle":"100"}'
```

Perform SnapMirror restore transfer of a file

```
 POST "/api/snapmirror/relationships/c8c62a90-0fef-11e9-b09e-
0050568e7067/transfers" '{"source_snapshot": "src",
"files":[{"source_path": "/a1.txt.0", "destination_path": "/a1-
renamed.txt.0"}]}'
```

Performing a SnapMirror initialize or update using a particular snapshot.

```
 POST "/api/snapmirror/relationships/e4e7e130-0279-11e9-b566-
0050568e9909/transfers" '{"source_snapshot":"snap1"}'
```

Learn more

- DOC /snapmirror/relationships/{relationship.uuid}/transfers

Parameters

Name	Type	In	Required	Description
relationship.uuid	string	path	True	SnapMirror relationship UUID
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
bytes_transferred	integer	Bytes transferred
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.
error_info	error_info	Error information for the transfer.

Name	Type	Description
files	array[files]	This is supported for transfer of restore relationship only. This specifies the list of files or LUNs to be restored. Can contain up to eight files or LUNs.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
options	array[options]	Options for snapmirror transfer.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.
source_snapshot	string	Specifies the snapshot on the source to be transferred to the destination.
storage_efficiency_enabled	boolean	This is supported for transfer of restore relationship only. Set this property to "false" to turn off storage efficiency for data transferred over the wire and written to the destination.

Name	Type	Description
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship or SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_duration	string	Elapsed transfer time.
uuid	string	Unique identifier of the SnapMirror transfer.

Example request


```
{
  "bytes_transferred": 0,
  "checkpoint_size": 0,
  "end_time": "2020-12-02 21:36:19 -0500",
  "error_info": {
    "code": 6620046,
    "message": "Transfer aborted"
  },
  "files": [
    {
      "destination_path": "/dirb/file2",
      "source_path": "/dira/file1"
    }
  ],
  "last_updated_time": "2023-09-15 19:58:39 -0400",
  "network_compression_ratio": 61,
  "on_demand_attrs": "read_write_with_user_data_pull",
  "options": [
    {}
  ],
  "relationship": {
    "destination": {
      "cluster": {
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "consistency_group_volumes": [
        {
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      ],
      "ipspace": "Default",
      "luns": {
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "path": "svm1:volume1",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    },
    "uuid": "d2d7ceea-ab52-11e8-855e-00505682a4c7"
```

```
  },
  "snapshot": "string",
  "source_snapshot": "string",
  "throttle": 0,
  "total_duration": "PT28M41S",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303845	Restore operation failed
13303812	Initialize operation failed
13303844	Update operation failed
13303846	Empty source path file list
13303847	Invalid property
13304040	Throttle not supported for update of Synchronous SnapMirror relationships
6620237	SnapMirror relationship database write failed
6620238	SnapMirror relationship database read failed

13304134	The overwrite property specified does not match the value specified in the previous request.	
6619720	Relationship information has been updated and is being propagated. Wait a few minutes and try the operation again.
13303816	Could not retrieve the state or status values for the relationship. Wait a few minutes and try the operation again.
13304159	Could not retrieve the state or status values for the relationship. Wait a few minutes and try the operation again. If the error persists, address the error condition shown.

See Definitions

href

Name	Type	Description
href	string	

_links

error_info

Error information for the transfer.

Name	Type	Description
code	integer	Error code
message	string	Error message

files

Specifies a file or LUN consisting of a source_path and an optional destination_path. If not specified, the destination_path is the same as the source_path. File restore is not supported if the source_path or destination_path contains commas in its directory or file name.

Name	Type	Description
destination_path	string	
source_path	string	

options

cluster

Name	Type	Description
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

Name	Type	Description
uuid	string	Unique identifier of the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the

endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
ipspace	string	Optional property to specify the IPSpace of the SVM.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

relationship

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
restore	boolean	Is the relationship for restore?
uuid	string	Unique identifier of the SnapMirror relationship.

snapmirror_transfer

SnapMirror transfer information

Name	Type	Description
bytes_transferred	integer	Bytes transferred
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.
error_info	error_info	Error information for the transfer.

Name	Type	Description
files	array[files]	This is supported for transfer of restore relationship only. This specifies the list of files or LUNs to be restored. Can contain up to eight files or LUNs.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
options	array[options]	Options for snapmirror transfer.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.
source_snapshot	string	Specifies the snapshot on the source to be transferred to the destination.
storage_efficiency_enabled	boolean	This is supported for transfer of restore relationship only. Set this property to "false" to turn off storage efficiency for data transferred over the wire and written to the destination.

Name	Type	Description
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship or SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_duration	string	Elapsed transfer time.
uuid	string	Unique identifier of the SnapMirror transfer.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve attributes of an ongoing SnapMirror transfer

GET `/snapmirror/relationships/{relationship.uuid}/transfers/{uuid}`

Introduced In: 9.6

Retrieves the attributes of a specific ongoing SnapMirror transfer.

Related ONTAP commands

- `snapmirror show`

Example

```
GET "/api/snapmirror/relationships/293baa53-e63d-11e8-bff1-
005056a793dd/transfers/293baa53-e63d-11e8-bff1-005056a793dd"
```

Learn more

- DOC /snapmirror/relationships/{relationship.uuid}/transfers

Parameters

Name	Type	In	Required	Description
relationship.uuid	string	path	True	SnapMirror relationship UUID
uuid	string	path	True	SnapMirror transfer UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
bytes_transferred	integer	Bytes transferred
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.
error_info	error_info	Error information for the transfer.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.

Name	Type	Description
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.
state	string	Status of the transfer. Set PATCH state to "aborted" to abort the transfer. Set PATCH state to "hard_aborted" to abort the transfer and discard the restart checkpoint. To find "queued" transfers refer to relationships GET API.
throttle	integer	Throttle, in KBs per second. This "throttle" overrides the "throttle" set on the SnapMirror relationship or SnapMirror relationship's policy. If neither of these are set, defaults to 0, which is interpreted as unlimited.
total_duration	string	Elapsed transfer time.
uuid	string	Unique identifier of the SnapMirror transfer.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "bytes_transferred": 0,
  "checkpoint_size": 0,
  "end_time": "2020-12-02 21:36:19 -0500",
  "error_info": {
    "code": 6620046,
    "message": "Transfer aborted"
  },
  "last_updated_time": "2023-09-15 19:58:39 -0400",
  "network_compression_ratio": 61,
  "on_demand_attrs": "read_write_with_user_data_pull",
  "relationship": {
    "destination": {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "consistency_group_volumes": [
        {
          "name": "volume1"
        }
      ],
      "luns": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "path": "svm1:volume1",
      "svm": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        }
      },
      "uuid": "d2d7ceea-ab52-11e8-855e-00505682a4c7"
    },
    "snapshot": "string",
    "state": "string",
    "storage_efficiency_enabled": true,
    "throttle": 0,
    "total_duration": "PT28M41S",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_info

Error information for the transfer.

Name	Type	Description
code	integer	Error code
message	string	Error message

files

Specifies a file or LUN consisting of a source_path and an optional destination_path. If not specified, the destination_path is the same as the source_path. File restore is not supported if the source_path or destination_path contains commas in its directory or file name.

Name	Type	Description
destination_path	string	
source_path	string	

options

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
_links	_links	
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	

Name	Type	Description
consistency_group_volumes	array[consistency_group_volumes]	This property specifies the list of FlexVol volumes or LUNs of a Consistency Group. Optional on the ASA r2 platform. Mandatory for all other platforms.
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

relationship

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6
restore	boolean	Is the relationship for restore?
uuid	string	Unique identifier of the SnapMirror relationship.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Cancel an ongoing SnapMirror transfer

PATCH `/snapmirror/relationships/{relationship.uuid}/transfers/{uuid}`

Introduced In: 9.6

Aborts an ongoing SnapMirror transfer. This operation is applicable on asynchronous SnapMirror relationships.

Related ONTAP commands

- `snapmirror abort`

Example

```
PATCH "/api/snapmirror/relationships/293baa53-e63d-11e8-bff1-
005056a793dd/transfers/293baa53-e63d-11e8-bff1-005056a793dd"
'{"state":"aborted"}'
```

Learn more

- DOC /snapmirror/relationships/{relationship.uuid}/transfers

Parameters

Name	Type	In	Required	Description
relationship.uuid	string	path	True	SnapMirror relationship UUID
uuid	string	path	True	SnapMirror transfer UUID

Request Body

Name	Type	Description
bytes_transferred	integer	Bytes transferred

Name	Type	Description
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.
error_info	error_info	Error information for the transfer.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.
state	string	Status of the transfer. Set PATCH state to "aborted" to abort the transfer. Set PATCH state to "hard_aborted" to abort the transfer and discard the restart checkpoint. To find "queued" transfers refer to relationships GET API.
total_duration	string	Elapsed transfer time.
uuid	string	Unique identifier of the SnapMirror transfer.

Example request


```
{
  "bytes_transferred": 0,
  "checkpoint_size": 0,
  "end_time": "2020-12-02 21:36:19 -0500",
  "error_info": {
    "code": 6620046,
    "message": "Transfer aborted"
  },
  "last_updated_time": "2023-09-15 19:58:39 -0400",
  "network_compression_ratio": 61,
  "on_demand_attrs": "read_write_with_user_data_pull",
  "relationship": {
    "destination": {
      "cluster": {
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "luns": {
        "name": "/vol/volume1/lun1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "path": "svm1:volume1",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      }
    },
    "uuid": "d2d7ceea-ab52-11e8-855e-00505682a4c7"
  },
  "snapshot": "string",
  "state": "string",
  "storage_efficiency_enabled": true,
  "total_duration": "PT28M41S",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response codes

Error code	Description
13303848	Abort of sync SnapMirror is not allowed
13303849	SnapMirror transfer state is invalid

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

error_info

Error information for the transfer.

Name	Type	Description
code	integer	Error code
message	string	Error message

files

Specifies a file or LUN consisting of a source_path and an optional destination_path. If not specified, the destination_path is the same as the source_path. File restore is not supported if the source_path or destination_path contains commas in its directory or file name.

Name	Type	Description
destination_path	string	
source_path	string	

options

cluster

Name	Type	Description
name	string	
uuid	string	

consistency_group_volumes

Name	Type	Description
name	string	The name of the volume.

luns

Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
name	string	The name of a LUN. A LUN is located within a volume. Optionally, it can be located within a qtree in a volume. LUN names are paths of the form "/vol/<volume>[/<qtree>]/<namespace>" where the qtree name is optional.
uuid	string	The unique identifier of the LUN.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapmirror_endpoint

Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint.

Name	Type	Description
cluster	cluster	
luns	luns	Optional property for a SnapMirror endpoint. Specifies the list of source LUNs and optionally list of destination LUNs during SnapMirror Consistency Group LUN restore operation.

Name	Type	Description
path	string	ONTAP FlexVol/FlexGroup - svm1:volume1 ONTAP SVM - svm1: ONTAP Consistency Group - svm1:/cg/cg_name ONTAP S3 - svm1:/bucket/bucket1 NON-ONTAP - objstore1:/objstore • example: svm1:volume1 • Introduced in: 9.6 • x-nullable: true
svm	svm	SVM, applies only to SVM-scoped objects.

relationship

Name	Type	Description
destination	snapmirror_endpoint	Endpoint of a SnapMirror relationship. For a GET request, the property "cluster" is populated when the endpoint is on a remote cluster. A POST request to create the destination SVM endpoint or to establish an SVM DR relationship must have the property "cluster" populated with the remote cluster details. A POST request to create the destination FlexVol volume, FlexGroup volume, Consistency Group, ONTAP S3 bucket and NON-ONTAP object-store endpoints can optionally specify the "cluster" property when the source SVM and the destination SVM are peered. A POST request to establish a SnapMirror relationship between the source endpoint and destination endpoint and when the source SVM and the destination SVM are not peered, must specify the "cluster" property for the remote endpoint. • Introduced in: 9.6

Name	Type	Description
restore	boolean	Is the relationship for restore?
uuid	string	Unique identifier of the SnapMirror relationship.

snapmirror_transfer

SnapMirror transfer information

Name	Type	Description
bytes_transferred	integer	Bytes transferred
checkpoint_size	integer	Amount of data transferred in bytes as recorded in the restart checkpoint.
end_time	string	End time of the transfer.
error_info	error_info	Error information for the transfer.
last_updated_time	string	Last updated time of the bytes transferred in an active transfer.
network_compression_ratio	string	Specifies the compression ratio achieved for the data sent over the wire with network compression enabled. This property is only valid for active transfers.
on_demand_attrs	string	Specifies whether or not an on-demand restore is being carried out. This is only supported for the transfer of restore relationships for entire volumes from the object store. A value for read_write_with_user_data_pull should be provided to start an on-demand restore. A file restore from the object store does not support this option.
relationship	relationship	
snapshot	string	Name of snapshot being transferred.

Name	Type	Description
state	string	Status of the transfer. Set PATCH state to "aborted" to abort the transfer. Set PATCH state to "hard_aborted" to abort the transfer and discard the restart checkpoint. To find "queued" transfers refer to relationships GET API.
total_duration	string	Elapsed transfer time.
uuid	string	Unique identifier of the SnapMirror transfer.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Storage

Storage overview

Overview

The ONTAP storage APIs can be used to manage physical and logical storage. This includes management of aggregates, volumes, LUNs, qtrees, snapshots, quotas, and storage efficiency.

Retrieve or create a collection of storage aggregates

Storage aggregates endpoint overview

Retrieving storage aggregate information

The Storage Aggregate GET API retrieves all data aggregates in the cluster. System owned root aggregates are not included in the output.
This API also supports specific queries, in addition to queries on aggregate body properties, which affect the output of the API. The parameters
for these queries are "recommend" and "show_spares". Using the "recommend" query returns the list of aggregates that are
recommended for creation in the cluster. The "show_spares" query returns a response outside of the records body, which includes the groups
of usable spares in the cluster. The "show_spares" query along with "flash_pool_eligible" restricts groups of usable spares for whole disk based flash pool creation. For storage pool creation, the appropriate groups of eligible spares will be returned by a GET on storage/pools?show_spares=true.
The usable count for each class of spares does not include reserved spare capacity recommended by ONTAP best practices.

The collection GET returns the aggregate identifiers, UUID and name, and the node on which the aggregate resides. The instance GET, by default, returns all of the properties defined in the aggregates object, except advanced properties.
The properties "space.footprint", "is_spare_low", "space.block_storage.inactive_user_data", "space.block_storage.inactive_user_data_percent", "inode_attributes.version", "inode_attributes.files_private_used", "inode_attributes.file_private_capacity" and "inode_attributes.file_public_capacity" are considered advanced properties and only returned when requested using the "fields" query parameter. Performance "metric" and "statistics" for aggregates are also only returned when requested. The "statistics" property accounts for the cumulative raw values collected by ONTAP for an aggregate, while the "metric" property displays the incremental average for latency and incremental changes in IOPs and throughput over the last 15 seconds. Any external application can use the raw statistics to derive its own incremental performance metrics.
The collection GET does not support queries in conjunction with the "order_by" parameter.

Creating storage aggregates

When the POST command is issued with no properties, the system evaluates the cluster attached storage, determines the optimal aggregate layout and configures the aggregates. This layout is completely controlled by the system.
To view the recommended optimal layout rather than creating it, use the GET endpoint, setting the "recommend" query to 'true'. This response will also include any warnings related to any inefficiencies in the storage configuration.
Recommended aggregate creation is not supported on ONTAP Cloud and MetroCluster with Fibre Channel (FC).
Alternatively, POST can be used with specific properties to create an aggregate as requested. At a minimum, the
aggregate name, disk count, and the node where it should reside are required if any properties are provided.
Aggregates are automatically created and expanded in the ASA r2 system. Therefore, automatic and manual aggregate creation or expansion through REST is not supported.

When using POST with input properties, three properties are required. These are:

- name
- node.name or node.uuid

- block_storage.primary.disk_count

Remaining properties are optional

The following properties can be specified in POST:

- name - Name of the aggregate.
- node.name and node.uuid - Node on which the aggregate will be created.
- block_storage.primary.disk_count - Number of disks to be used to create the aggregate.
- block_storage.mirror.enabled - Specifies whether or not the aggregate should be created using SyncMirror.
- block_storage.primary.checksum_style - Checksum style of the disks to be use for the aggregate.
- block_storage.primary.disk_class - Class of disks to be use to for the aggregate.
- block_storage.primary.raid_size - Desired RAID size of the aggregate.
- block_storage.primary.raid_type - Desired RAID type of the aggregate.
- snaplock_type - SnapLock type to use on the aggregate.
- data_encryption.software_encryption_enabled - Enable or disable NAE (NetApp Aggregate Encryption) on the aggregate.
- simulate - Simulate the creation of the aggregate with specified input parameters.
  If the simulate field is specified, the response includes information on the proposed aggregate disk layout, any associated warnings, along with the proposed final size of the aggregate.

Examples

Retrieving a list of aggregates from the cluster

The following example shows the response with a list of data aggregates in the cluster:

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates" -H "accept:
application/json"

# The response:
{
"records": [
  {
    "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
    "name": "test1",
    "node": {
      "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
      "name": "node-1",
    },
  },
  {
    "uuid": "4a7e4139-ca7a-420b-9a11-3f040d2189fd",
    "name": "test4",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2",
    },
  }
],
"num_records": 2,
}
```

Retrieving a list of aggregates recommended for creation from the cluster

The following example shows the response with a list of recommended data aggregates in the cluster.

> Each aggregate UUID provided in this response is not guaranteed to be the same UUID for the aggregate if it is created.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/aggregates?recommend=true&fields=*" -H "accept:
application/json"
```

```
# The response:
{
"records": [
  {
    "uuid": "795bf7c2-fa4b-11e8-ba65-005056bbe5c1",
    "name": "node_2_SSD_1",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2",
    },
    "space": {
      "block_storage": {
        "size": 1116180480
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 22,
        "disk_class": "solid_state",
        "raid_type": "raid_dp",
        "disk_type": "ssd",
        "raid_size": 24,
        "simulated_raid_groups": [
           {
             "name": "node_2_SSD_1/plex0/rg0",
             "raid_type": "raid_dp",
             "parity_disk_count": 2,
             "data_disk_count": 9,
             "usable_size": 12309487,
             "is_partition": true
           },
           {
             "name": "node_2_SSD_1/plex1/rg0",
             "raid_type": "raid_dp",
             "parity_disk_count": 2,
             "data_disk_count": 9,
             "usable_size": 12309487,
             "is_partition": false
           }
        ]
      },
      "hybrid_cache": {
        "enabled": true,
        "storage_pools": [
            {
                "allocation_units_count": 1,
```

```
                "storage_pool": {
                    "name": "sp1",
                    "uuid": "1511d084-7290-11ec-ae5b-005056bb2afa"
                }
            },
            {
                "allocation_units_count": 1,
                "storage_pool": {
                    "name": "sp2",
                    "uuid": "342d234f-7291-11ec-ae5b-005056bb2afa"
                }
            }
        ]
      },
      "mirror": {
        "enabled": true
      }
    },
  },
  {
    "uuid": "795c0a15-fa4b-11e8-ba65-005056bbe5c1",
    "name": "node_1_SSD_1",
    "node": {
      "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
      "name": "node-1",
    },
    "space": {
      "block_storage": {
        "size": 352477184
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 22,
        "disk_class": "solid_state",
        "raid_type": "raid_dp",
        "disk_type": "ssd",
        "raid_size": 24,
        "simulated_raid_groups": [
           {
             "name": "node_1_SSD_1/plex0/rg0",
             "raid_type": "raid_dp",
             "parity_disk_count": 2,
             "data_disk_count": 9,
             "usable_size": 12309487,
             "is_partition": true
```

```
            },
            {
              "name": "node_1_SSD_1/plex1/rg0",
              "raid_type": "raid_dp",
              "parity_disk_count": 2,
              "data_disk_count": 9,
              "usable_size": 12309487,
              "is_partition": false
            }
          ]
      },
      "hybrid_cache": {
        "enabled": false
      },
      "mirror": {
        "enabled": true
      }
    },
  }
],
"recommendation_spares" [
  {
    "node": {
      "uuid": "795bf7c2-fa4b-11e8-ba65-005056bbe5cl",
      "name": "node-2"
      }
    },
    "disk_class": "solid-state",
    "size": "2856845312",
    "is_partition": true,
    "disk_type": "ssd",
    "syncmirror_pool": "pool10",
    "usable": 1
  }
],
"num_records": 2,
"warnings": [
  {
    "name": "node_1_SSD_1",
    "warning": {
      "code": 19726347,
      "message": "Unable to use all attached capacity on node \"node_1\".
3 local/remote pool disks not usable for mirroring.",
      "arguments": [
        "node_1",
        "3"
```

```
      ]
    },
    "action": {
      "code": 19726348,
      "message": "Contact technical support."
    }
  },
  {
    "name": "node_2_SSD_1",
    "warning": {
      "code": 19726347,
      "message": "Unable to use all attached capacity on node \"node_2\".
3 local/remote pool disks not usable for mirroring.",
      "arguments": [
        "node_2",
        "3"
      ]
    },
    "action": {
      "code": 19726348,
      "message": "Contact technical support."
    }
  }
]
}
```


Retrieving the usable spare information for the cluster

The following example shows the response from retrieving usable spare information according to ONTAP best practices.


```
 # The API:
/api/storage/aggregates?show_spares=true

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates?show_spares=true" -H
"accept: application/json"

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
```

```
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 3720609792,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "is_partitioned": true,
    "usable": 12,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  },
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
```

```
    },
    "disk_class": "solid_state",
    "disk_type": "ssd_nvm",
    "size": 8583380992,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "is_partitioned": false,
    "usable": 5,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  }
]
}
```

Retrieving the SSD spare count information for the cluster

The following example shows the response from retrieving SSD spare count information.

```
# The API:
/api/storage/aggregates?show_spares=true&flash_pool_eligible=true

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/aggregates?show_spares=true&flash_pool_eligible=true" -H
"accept: application/json"

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 3720609792,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "is_partitioned": true,
    "usable": 12,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
```

```
          "max": 14,
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  },
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd_nvm",
    "size": 8583380992,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "is_partitioned": false,
    "usable": 5,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
```

```
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  }
]
}
```


Retrieving the total spare count information for the cluster

The following example shows the response from retrieving total spare count information, under advanced privilege.


```
 # The API:
/api/storage/aggregates?show_spares=true&fields=**

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/aggregates?show_spares=true&fields=**" -H "accept:
application/json"

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 3720609792,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
```

```
    "is_partitioned": true,
    "usable": 12,
    "total": 14,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  },
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd_nvm",
    "size": 8583380992,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
```

```
    "is_partitioned": false,
    "usable": 5,
    "total": 6,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      },
      {
        "raid_type": "raid4",
        "default": false,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
          "default": 8
        }
      },
      {
        "raid_type": "raid_tec",
        "default": false,
        "aggregate_min_disks": 7,
        "raid_group": {
          "min": 4,
          "max": 29,
          "default": 25
        }
      }
    ]
  }
]
}
```


Simulating the creation of an aggregate using defined parameters

The following example shows the response in the simulation of a manual aggregate creation:

```
# The API:
/api/storage/aggregates
```

```
# The call
curl -X POST "https://<mgmt-ip>/api/storage/aggregates" -H "accept:
application/json" -d "{\"name\":\"node_2_SSD_1\",\"node\":
{\"name\":\"node-2\"},\"block_storage\": {\"primary\": {\"disk_count\":
\"12\" }},\"simulate\": \"true\"}"

# The response:
{
"records": [
  {
    "uuid": "795bf7c2-fa4b-11e8-ba65-005056bbe5c1",
    "name": "node_2_SSD_1",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2",
    },
    "space": {
      "block_storage": {
        "size": 1116180480
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 12,
        "disk_class": "solid_state",
        "raid_type": "raid_dp",
        "disk_type": "ssd",
        "raid_size": 24,
        "simulated_raid_groups": [
           {
             "name": "node_2_SSD_1/plex0/rg0",
             "raid_type": "raid_dp",
             "parity_disk_count": 2,
             "data_disk_count": 10,
             "usable_size": 558090240,
             "is_partition": true
           },
        ]
      },
      "hybrid_cache": {
        "enabled": false
      },
      "mirror": {
        "enabled": false
      }
    }
```

```
    }
  ],
  "num_records": 1,
  "warnings": [
    {
      "name": "node-2"
      "warning": {
        "code": 19726347,
        "message": "Number of unassigned disks attached to node \"node-2\":
6.",
        "arguments": [
          "node-2",
          "6"
        ]
      }
    }
  ]
  }
```


Retrieve a collection of aggregates for an entire cluster

GET `/storage/aggregates`

Introduced In: 9.6

Retrieves the collection of aggregates for the entire cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `metric.*`
- `space.block_storage.inactive_user_data`
- `space.block_storage.inactive_user_data_percent`
- `space.footprint`
- `is_spare_low`
- `statistics.*`

Related ONTAP commands

- `storage aggregate show`

Parameters

Name	Type	In	Required	Description
recommend	boolean	query	False	If set to 'true', it queries the system for the recommended optimal layout for creating new aggregates. The default setting is 'false'.
show_spares	boolean	query	False	If set to 'true', the spares object is returned instead of records to show the spare groups in the cluster. The default setting is 'false'.
flash_pool_eligible	boolean	query	False	If set to 'true' along with show_spares, the spares object is restricted to return spare groups that are compatible with whole disk based flash pool creation. The default setting is 'false'. • Introduced in: 9.12
is_spare_low	boolean	query	False	Filter by is_spare_low • Introduced in: 9.11
dr_home_node.uuid	string	query	False	Filter by dr_home_node.uuid
dr_home_node.name	string	query	False	Filter by dr_home_node.name

Name	Type	In	Required	Description
inode_attributes.version	integer	query	False	Filter by inode_attributes.version • Introduced in: 9.11
inode_attributes.files_private_used	integer	query	False	Filter by inode_attributes.files_private_used • Introduced in: 9.11
inode_attributes.max_files_available	integer	query	False	Filter by inode_attributes.max_files_available • Introduced in: 9.11
inode_attributes.file_public_capacity	integer	query	False	Filter by inode_attributes.file_public_capacity • Introduced in: 9.11
inode_attributes.max_files_possible	integer	query	False	Filter by inode_attributes.max_files_possible • Introduced in: 9.11
inode_attributes.file_private_capacity	integer	query	False	Filter by inode_attributes.file_private_capacity • Introduced in: 9.11
inode_attributes.files_used	integer	query	False	Filter by inode_attributes.files_used • Introduced in: 9.11

Name	Type	In	Required	Description
inode_attributes.files_total	integer	query	False	Filter by inode_attributes.files_total • Introduced in: 9.11
inode_attributes.used_percent	integer	query	False	Filter by inode_attributes.used_percent • Introduced in: 9.11 • Max value: 100 • Min value: 0
inode_attributes.max_files_used	integer	query	False	Filter by inode_attributes.max_files_used • Introduced in: 9.11
home_node.uuid	string	query	False	Filter by home_node.uuid
home_node.name	string	query	False	Filter by home_node.name
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.7
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.7
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.7
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.7
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.7
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.7
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.7

Name	Type	In	Required	Description
metric.throughput.other	integer	query	False	Filter by metric.throughput.other • Introduced in: 9.7
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.7
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.7
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.7
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.7
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.7
sidl_enabled	boolean	query	False	Filter by sidl_enabled • Introduced in: 9.11
create_time	string	query	False	Filter by create_time
name	string	query	False	Filter by name

Name	Type	In	Required	Description
_tags	string	query	False	Filter by _tags • Introduced in: 9.13
uuid	string	query	False	Filter by uuid
snaplock_type	string	query	False	Filter by snaplock_type
volume-count	integer	query	False	Filter by volume-count • Introduced in: 9.11
snapshot.max_files_used	integer	query	False	Filter by snapshot.max_files_used • Introduced in: 9.10
snapshot.max_files_available	integer	query	False	Filter by snapshot.max_files_available • Introduced in: 9.10
snapshot.files_total	integer	query	False	Filter by snapshot.files_total • Introduced in: 9.10
snapshot.files_used	integer	query	False	Filter by snapshot.files_used • Introduced in: 9.10
space.block_storage.volume_deduplication_space_saved	integer	query	False	Filter by space.block_storage.volume_deduplication_space_saved • Introduced in: 9.10

Name	Type	In	Required	Description
space.block_storage.physical_used	integer	query	False	Filter by space.block_storage.physical_used • Introduced in: 9.9
space.block_storage.aggregate_metadata_percent	integer	query	False	Filter by space.block_storage.aggregate_metadata_percent • Introduced in: 9.10
space.block_storage.volume_deduplication_space_saved_percent	integer	query	False	Filter by space.block_storage.volume_deduplication_space_saved_percent • Introduced in: 9.10
space.block_storage.available	integer	query	False	Filter by space.block_storage.available
space.block_storage.data_compaction_space_saved	integer	query	False	Filter by space.block_storage.data_compaction_space_saved • Introduced in: 9.10
space.block_storage.used_including_snapshot_reserve	integer	query	False	Filter by space.block_storage.used_including_snapshot_reserve • Introduced in: 9.10

Name	Type	In	Required	Description
space.block_storage.volume_deduplication_shared_count	integer	query	False	Filter by space.block_storage.volume_deduplication_shared_count • Introduced in: 9.10
space.block_storage.inactive_user_data_percent	integer	query	False	Filter by space.block_storage.inactive_user_data_percent • Introduced in: 9.10
space.block_storage.inactive_user_data	integer	query	False	Filter by space.block_storage.inactive_user_data
space.block_storage.used_including_snapshot_reserve_percent	integer	query	False	Filter by space.block_storage.used_including_snapshot_reserve_percent • Introduced in: 9.10
space.block_storage.size	integer	query	False	Filter by space.block_storage.size
space.block_storage.used_percent	integer	query	False	Filter by space.block_storage.used_percent • Introduced in: 9.13
space.block_storage.used	integer	query	False	Filter by space.block_storage.used

Name	Type	In	Required	Description
space.block_storage.aggregate_metadata	integer	query	False	Filter by space.block_storage.aggregate_metadata • Introduced in: 9.10
space.block_storage.full_threshold_percent	integer	query	False	Filter by space.block_storage.full_threshold_percent
space.block_storage.volume_footprints_percent	integer	query	False	Filter by space.block_storage.volume_footprints_percent • Introduced in: 9.10
space.block_storage.data_compaction_space_saved_percent	integer	query	False	Filter by space.block_storage.data_compaction_space_saved_percent • Introduced in: 9.10
space.block_storage.physical_used_percent	integer	query	False	Filter by space.block_storage.physical_used_percent • Introduced in: 9.10
space.block_storage.data_compacted_count	integer	query	False	Filter by space.block_storage.data_compacted_count • Introduced in: 9.10

Name	Type	In	Required	Description
space.snapshot.available	integer	query	False	Filter by space.snapshot.available • Introduced in: 9.10
space.snapshot.used_percent	integer	query	False	Filter by space.snapshot.used_percent • Introduced in: 9.10
space.snapshot.used	integer	query	False	Filter by space.snapshot.used • Introduced in: 9.10
space.snapshot.reserve_percent	integer	query	False	Filter by space.snapshot.reserve_percent • Introduced in: 9.10
space.snapshot.total	integer	query	False	Filter by space.snapshot.total • Introduced in: 9.10
space.cloud_storage.used	integer	query	False	Filter by space.cloud_storage.used
space.efficiency.savings	integer	query	False	Filter by space.efficiency.savings
space.efficiency.cross_volume_dedupe_savings	boolean	query	False	Filter by space.efficiency.cross_volume_dedupe_savings • Introduced in: 9.12

Name	Type	In	Required	Description
space.efficiency.ratio	number	query	False	Filter by space.efficiency.ratio
space.efficiency.auto_adaptive_compression_savings	boolean	query	False	Filter by space.efficiency.auto_adaptive_compression_savings • Introduced in: 9.12
space.efficiency.cross_volume_inline_dedupe	boolean	query	False	Filter by space.efficiency.cross_volume_inline_dedupe • Introduced in: 9.12
space.efficiency.enable_workload_informed_tsse	boolean	query	False	Filter by space.efficiency.enable_workload_informed_tsse • Introduced in: 9.13
space.efficiency.logical_used	integer	query	False	Filter by space.efficiency.logical_used
space.efficiency.wise_tsse_min_used_capacity_pct	integer	query	False	Filter by space.efficiency.wise_tsse_min_used_capacity_pct • Introduced in: 9.13
space.efficiency.cross_volume_background_dedupe	boolean	query	False	Filter by space.efficiency.cross_volume_background_dedupe • Introduced in: 9.12

Name	Type	In	Required	Description
space.efficiency_without_snapshots_flexclones.logical_used	integer	query	False	Filter by space.efficiency_without_snapshots_flexclones.logical_used • Introduced in: 9.9
space.efficiency_without_snapshots_flexclones.savings	integer	query	False	Filter by space.efficiency_without_snapshots_flexclones.savings • Introduced in: 9.9
space.efficiency_without_snapshots_flexclones.ratio	number	query	False	Filter by space.efficiency_without_snapshots_flexclones.ratio • Introduced in: 9.9
space.efficiency_without_snapshots.logical_used	integer	query	False	Filter by space.efficiency_without_snapshots.logical_used
space.efficiency_without_snapshots.savings	integer	query	False	Filter by space.efficiency_without_snapshots.savings
space.efficiency_without_snapshots.ratio	number	query	False	Filter by space.efficiency_without_snapshots.ratio
space.footprint	integer	query	False	Filter by space.footprint
data_encryption.software_encryption_enabled	boolean	query	False	Filter by data_encryption.software_encryption_enabled

Name	Type	In	Required	Description
data_encryption.drive_protection_enabled	boolean	query	False	Filter by data_encryption.drive_protection_enabled
state	string	query	False	Filter by state
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.7
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.7
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.7
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other • Introduced in: 9.7
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.7
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.7
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.7
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.7
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.7
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.7
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.7
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.7
inactive_data_reporting.start_time	string	query	False	Filter by inactive_data_reporting.start_time • Introduced in: 9.8
inactive_data_reporting.enabled	boolean	query	False	Filter by inactive_data_reporting.enabled • Introduced in: 9.8
cloud_storage.stores.used	integer	query	False	Filter by cloud_storage.stores.used • Introduced in: 9.14
cloud_storage.stores.cloud_store.uuid	string	query	False	Filter by cloud_storage.stores.cloud_store.uuid • Introduced in: 9.14
cloud_storage.stores.cloud_store.name	string	query	False	Filter by cloud_storage.stores.cloud_store.name • Introduced in: 9.14
cloud_storage.attach_eligible	boolean	query	False	Filter by cloud_storage.attach_eligible • Introduced in: 9.14

Name	Type	In	Required	Description
block_storage.primary.disk_type	string	query	False	Filter by block_storage.primary.disk_type • Introduced in: 9.7
block_storage.primary.simulated_raid_groups.usable_size	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.usable_size • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.raid_type	string	query	False	Filter by block_storage.primary.simulated_raid_groups.raid_type • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.name	string	query	False	Filter by block_storage.primary.simulated_raid_groups.name • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.is_partition	boolean	query	False	Filter by block_storage.primary.simulated_raid_groups.is_partition • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.added_parity_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.added_parity_disk_count • Introduced in: 9.11

Name	Type	In	Required	Description
block_storage.primary.simulated_raid_groups.parity_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.parity_disk_count • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.data_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.data_disk_count • Introduced in: 9.10
block_storage.primary.simulated_raid_groups.added_data_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.added_data_disk_count • Introduced in: 9.11
block_storage.primary.simulated_raid_groups.existing_parity_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.existing_parity_disk_count • Introduced in: 9.11
block_storage.primary.simulated_raid_groups.existing_data_disk_count	integer	query	False	Filter by block_storage.primary.simulated_raid_groups.existing_data_disk_count • Introduced in: 9.11
block_storage.primary.raid_size	integer	query	False	Filter by block_storage.primary.raid_size

Name	Type	In	Required	Description
block_storage.primary.disk_count	integer	query	False	Filter by block_storage.primary.disk_count
block_storage.primary.disk_class	string	query	False	Filter by block_storage.primary.disk_class
block_storage.primary.raid_type	string	query	False	Filter by block_storage.primary.raid_type
block_storage.primary.checksum_style	string	query	False	Filter by block_storage.primary.checksum_style
block_storage.mirror.enabled	boolean	query	False	Filter by block_storage.mirror.enabled
block_storage.mirror.state	string	query	False	Filter by block_storage.mirror.state
block_storage.uses_partitions	boolean	query	False	Filter by block_storage.uses_partitions • Introduced in: 9.11
block_storage.plexes.name	string	query	False	Filter by block_storage.plexes.name
block_storage.storage_type	string	query	False	Filter by block_storage.storage_type • Introduced in: 9.11
block_storage.hybrid_cache.disk_type	string	query	False	Filter by block_storage.hybrid_cache.disk_type • Introduced in: 9.12

Name	Type	In	Required	Description
block_storage.hybrid_cache.enabled	boolean	query	False	Filter by block_storage.hybrid_cache.enabled
block_storage.hybrid_cache.storage_pools.allocation_units_count	integer	query	False	Filter by block_storage.hybrid_cache.storage_pools.allocation_units_count • Introduced in: 9.11
block_storage.hybrid_cache.storage_pools.storage_pool.uuid	string	query	False	Filter by block_storage.hybrid_cache.storage_pools.storage_pool.uuid • Introduced in: 9.11
block_storage.hybrid_cache.storage_pools.storage_pool.name	string	query	False	Filter by block_storage.hybrid_cache.storage_pools.storage_pool.name • Introduced in: 9.11
block_storage.hybrid_cache.raid_size	integer	query	False	Filter by block_storage.hybrid_cache.raid_size • Introduced in: 9.12
block_storage.hybrid_cache.used	integer	query	False	Filter by block_storage.hybrid_cache.used
block_storage.hybrid_cache.simulated_raid_groups.usable_size	integer	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.usable_size • Introduced in: 9.12

Name	Type	In	Required	Description
block_storage.hybrid_cache.simulated_raid_groups.name	string	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.name • Introduced in: 9.12
block_storage.hybrid_cache.simulated_raid_groups.is_partition	boolean	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.is_partition • Introduced in: 9.12
block_storage.hybrid_cache.simulated_raid_groups.existing_parity_disk_count	integer	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.existing_parity_disk_count • Introduced in: 9.12
block_storage.hybrid_cache.simulated_raid_groups.added_parity_disk_count	integer	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.added_parity_disk_count • Introduced in: 9.12
block_storage.hybrid_cache.simulated_raid_groups.added_data_disk_count	integer	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.added_data_disk_count • Introduced in: 9.12

Name	Type	In	Required	Description
block_storage.hybrid_cache.simulated_raid_groups.existing_data_disk_count	integer	query	False	Filter by block_storage.hybrid_cache.simulated_raid_groups.existing_data_disk_count • Introduced in: 9.12
block_storage.hybrid_cache.raid_type	string	query	False	Filter by block_storage.hybrid_cache.raid_type
block_storage.hybrid_cache.disk_count	integer	query	False	Filter by block_storage.hybrid_cache.disk_count
block_storage.hybrid_cache.size	integer	query	False	Filter by block_storage.hybrid_cache.size
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
recommendation_spares	array[aggregate_spare]	Information on the aggregate's remaining hot spare disks.
records	array[aggregate]	
spares	array[aggregate_spare]	
warnings	array[aggregate_warning]	List of warnings and remediation advice for the aggregate recommendation.

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "recommendation_spares": [
    {
      "checksum_style": "string",
      "disk_class": "solid_state",
      "disk_type": "string",
      "is_partition": 1,
      "layout_requirements": [
        {
          "aggregate_min_disks": 6,
          "raid_group": {
            "default": 16,
            "max": 28,
            "min": 5
          },
          "raid_type": "string"
        }
      ],
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
```

```
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "size": 10156769280,
      "syncmirror_pool": "string",
      "total": 10,
      "usable": 9
    }
  ],
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "block_storage": {
        "hybrid_cache": {
          "disk_count": 6,
          "disk_type": "string",
          "raid_size": 24,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string"
            }
          ],
          "size": 1612709888,
          "storage_pools": [
            {
              "storage_pool": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "storage_pool_1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            }
          ],
          "used": 26501122
        },
```

```
        "mirror": {
          "enabled": "",
          "state": "string"
        },
        "plexes": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "plex0"
          }
        ],
        "primary": {
          "checksum_style": "string",
          "disk_class": "performance",
          "disk_count": 8,
          "disk_type": "string",
          "raid_size": 16,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string",
              "raid_type": "string"
            }
          ]
        },
        "storage_type": "string"
      },
      "cloud_storage": {
        "stores": [
          {
            "cloud_store": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "store1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "used": 0
          }
        ]
      },
```

```
      "create_time": "2018-01-01 11:00:00 -0500",
      "dr_home_node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "home_node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "inactive_data_reporting": {
        "start_time": "2019-12-12 11:00:00 -0500"
      },
      "inode_attributes": {
        "file_private_capacity": 31136,
        "file_public_capacity": 31136,
        "files_private_used": 502,
        "files_total": 31136,
        "files_used": 97,
        "max_files_available": 31136,
        "max_files_possible": 2844525,
        "max_files_used": 97,
        "used_percent": 5,
        "version": 4
      },
      "is_spare_low": "",
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
```

```
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "node1_aggr_1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snaplock_type": "string",
      "snapshot": {
        "files_total": 10,
        "files_used": 3,
        "max_files_available": 5,
        "max_files_used": 50
      },
      "space": {
        "block_storage": {
          "aggregate_metadata": 2655,
          "aggregate_metadata_percent": 8,
          "available": 10156560384,
          "data_compacted_count": 1990000,
          "data_compaction_space_saved": 1996000,
          "data_compaction_space_saved_percent": 27,
          "full_threshold_percent": 0,
          "inactive_user_data": 304448,
          "inactive_user_data_percent": 0,
          "physical_used": 2461696,
          "physical_used_percent": 50,
          "size": 10156769280,
          "used": 2088960,
          "used_including_snapshot_reserve": 674685,
          "used_including_snapshot_reserve_percent": 35,
          "used_percent": 50,
          "volume_deduplication_shared_count": 1990000,
          "volume_deduplication_space_saved": 1996000,
```

```
          "volume_deduplication_space_saved_percent": 27,
          "volume_footprints_percent": 14
        },
        "cloud_storage": {
          "used": 402743264
        },
        "efficiency": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0,
          "wise_tsse_min_used_capacity_pct": 0
        },
        "efficiency_without_snapshots": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "efficiency_without_snapshots_flexclones": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "footprint": 608896,
        "snapshot": {
          "available": 2000,
          "reserve_percent": 20,
          "total": 5000,
          "used": 3000,
          "used_percent": 45
        }
      },
      "state": "string",
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
```

```
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "uuid": "string",
      "volume-count": 0
    }
  ],
  "spares": [
    {
      "checksum_style": "string",
      "disk_class": "solid_state",
      "disk_type": "string",
      "is_partition": 1,
      "layout_requirements": [
        {
          "aggregate_min_disks": 6,
          "raid_group": {
            "default": 16,
            "max": 28,
            "min": 5
          },
          "raid_type": "string"
        }
      ],
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "size": 10156769280,
      "syncmirror_pool": "string",
      "total": 10,
      "usable": 9
    }
  ],
  "warnings": [
    {
      "action": {
        "arguments": [
          "string"
```

```
          ],
          "message": "string"
        },
        "name": "string",
        "warning": {
          "arguments": [
            "string"
          ],
          "message": "string"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
787092	The target field cannot be specified for this operation.
918138	Internal error. Failed to get encryption operation status.
8586225	Encountered unexpected error in retrieving metrics and statistics for an aggregate.
19726341	Not enough eligible spare disks are available on the node.
19726344	No recommendation can be made for this cluster.
19726357	Aggregate recommendations are not supported on MetroCluster with Fibre Channel (FC).
19726358	Aggregate recommendations are not supported on ONTAP Cloud.
19726382	Another provisioning operation is in progress on this cluster. Wait a few minutes, and try the operation again.
19726386	Encountered an error when retrieving licensing information on this cluster.
19726387	No recommendation can be provided for this cluster within the license capacity.
19726401	Aggregate recommendations are not supported when the DR group is not in the "normal" state.

Error Code	Description
19726402	Internal error. Unable to determine the MetroCluster configuration state.
19726403	Aggregate recommendation is not supported when there are no healthy target connections to remote storage.
19726404	The recommended mirrored aggregate couldn’t use all the attached capacity in one of the SyncMirror pools. Make sure that the remote and local storage is symmetrically wired.
19726405	Not all local and remote disks attached to the node have been auto-partitioned.
19726406	Aggregate recommendations are not supported on this node because remote and local storage is not symmetrically wired.
19726540	The next tag is not supported for recommended aggregates. Retry the operation with a higher "return_timeout" value.
196608055	Aggregate recommendation is not supported on this node because it does not support NetApp Aggregate Encryption (NAE).
196608206	Internal error. Failed to get encryption operation status.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

raid_group

Name	Type	Description
default	integer	Default number of disks in a RAID group.
max	integer	Maximum number of disks allowed in a RAID group.
min	integer	Minimum number of disks allowed in a RAID group.

layout_requirement

Name	Type	Description
aggregate_min_disks	integer	Minimum number of disks to create an aggregate.
default	boolean	Indicates if this RAID type is the default.
raid_group	raid_group	
raid_type	string	RAID type.

_links

Name	Type	Description
self	href	

node

Node where the spares are assigned.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

aggregate_spare

Name	Type	Description
checksum_style	string	The checksum type that has been assigned to the spares.
disk_class	string	Disk class of spares.
disk_type	string	Type of disk.
is_partition	boolean	Indicates whether a disk is partitioned (true) or whole (false)
layout_requirements	array[layout_requirement]	Available RAID protections and their restrictions.
node	node	Node where the spares are assigned.

Name	Type	Description
size	integer	Usable size of each spare, in bytes.
syncmirror_pool	string	SyncMirror spare pool.
total	integer	Total number of spares in the bucket. The total spare count for each class of spares also includes reserved spare capacity recommended by ONTAP best practices. • example: 10 • readOnly: 1 • Introduced in: 9.11 • x-nullable: true
usable	integer	Total number of usable spares in the bucket. The usable count for each class of spares does not include reserved spare capacity recommended by ONTAP best practices. • example: 9 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.

Name	Type	Description
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
usable_size	integer	Usable size of each disk, in bytes.

storage_pool_reference

Shared Storage Pool

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pools

Name	Type	Description
allocation_units_count	integer	Allocation count of storage pool.
storage_pool	storage_pool_reference	Shared Storage Pool

hybrid_cache

Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.

Name	Type	Description
disk_count	integer	Number of disks used in the cache tier of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
disk_type	string	Type of disk being used by the aggregate's cache tier.
enabled	boolean	Specifies whether the aggregate uses HDDs with SSDs as a cache.

Name	Type	Description
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type for SSD cache of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
simulated_raid_groups	array[simulated_raid_groups]	
size	integer	Total usable space in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.
storage_pools	array[storage_pools]	List of storage pool properties and allocation_units_count for aggregate.
used	integer	Space used in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.

mirror

Name	Type	Description
enabled	boolean	Aggregate is SyncMirror protected
state	string	

plex_reference

Plex

Name	Type	Description
_links	_links	
name	string	

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.

Name	Type	Description
added_parity_disk_count	integer	Number of added parity disks in RAID group.
data_disk_count	integer	Number of data disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
parity_disk_count	integer	Number of parity disks in RAID group.
raid_type	string	RAID type of the aggregate.
usable_size	integer	Usable size of each disk, in bytes.

primary

Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.

Name	Type	Description
checksum_style	string	The checksum style used by the aggregate.
disk_class	string	The class of disks being used by the aggregate.
disk_count	integer	Number of disks used in the aggregate. This includes parity disks, but excludes disks in the hybrid cache.
disk_type	string	The type of disk being used by the aggregate.

Name	Type	Description
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type of the aggregate.
simulated_raid_groups	array[simulated_raid_groups]	

block_storage

Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
hybrid_cache	hybrid_cache	Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.
mirror	mirror	
plexes	array[plex_reference]	Plex reference for each plex in the aggregate.
primary	primary	Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.
storage_type	string	Type of aggregate.
uses_partitions	boolean	If true, aggregate is using shared disks.

cloud_store

Cloud store

Name	Type	Description
_links	_links	
name	string	
uuid	string	

cloud_storage_tier

Name	Type	Description
cloud_store	cloud_store	Cloud store
used	integer	Capacity used in bytes in the cloud store by this aggregate. This is a cached value calculated every 5 minutes.

cloud_storage

Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.

Name	Type	Description
attach_eligible	boolean	Specifies whether the aggregate is eligible for a cloud store to be attached.
migrate_threshold	integer	Specifies the minimum percentage of performance tier free space that must exist in order for migration of data from the capacity tier to performance tier to be allowed. Only valid for PATCH operations.
stores	array[cloud_storage_tier]	Configuration information for each cloud storage portion of the aggregate.
tiering_fullness_threshold	integer	The percentage of space in the performance tier that must be used before data is tiered out to the cloud store. Only valid for PATCH operations.

data_encryption

Name	Type	Description
drive_protection_enabled	boolean	Specifies whether the aggregate uses self-encrypting drives with data protection enabled.
software_encryption_enabled	boolean	Specifies whether NetApp aggregate encryption is enabled. All data in the aggregate is encrypted.

dr_home_node

Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.

Name	Type	Description
name	string	
uuid	string	

home_node

Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

inactive_data_reporting

Name	Type	Description
enabled	boolean	Specifies whether or not inactive data reporting is enabled on the aggregate.
start_time	string	Timestamp at which inactive data reporting was enabled on the aggregate.

inode_attributes

Name	Type	Description
file_private_capacity	integer	Number of files that can currently be stored on disk for system metadata files. This number will dynamically increase as more system files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
file_public_capacity	integer	Number of files that can currently be stored on disk for user-visible files. This number will dynamically increase as more user-visible files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_private_used	integer	Number of system metadata files used. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_total	integer	Maximum number of user-visible files that this referenced file system can currently hold. If the referenced file system is restricted or offline, a value of 0 is returned.

Name	Type	Description
files_used	integer	Number of user-visible files used in the referenced file system. If the referenced file system is restricted or offline, a value of 0 is returned.
max_files_available	integer	The count of the maximum number of user-visible files currently allowable on the referenced file system.
max_files_possible	integer	The largest value to which the maxfiles-available parameter can be increased by reconfiguration, on the referenced file system.
max_files_used	integer	The number of user-visible files currently in use on the referenced file system.
used_percent	integer	The percentage of disk space currently in use based on user-visible file count on the referenced file system.
version	integer	The inofile-version of the aggregate. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the aggregate.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Node where the aggregate currently resides.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

snapshot

Name	Type	Description
files_total	integer	Total files allowed in snapshots

Name	Type	Description
files_used	integer	Total files created in snapshots
max_files_available	integer	Maximum files available for snapshots
max_files_used	integer	Files in use by snapshots

block_storage

Name	Type	Description
aggregate_metadata	integer	Space used by different metafiles and internal operations inside the aggregate, in bytes.
aggregate_metadata_percent	integer	Aggregate metadata as a percentage.
available	integer	Space available in bytes.
data_compacted_count	integer	Amount of compacted data in bytes.
data_compaction_space_saved	integer	Space saved in bytes by compacting the data.
data_compaction_space_saved_percent	integer	Percentage saved by compacting the data.
full_threshold_percent	integer	The aggregate used percentage at which 'monitor.volume.full' EMS is generated.

Name	Type	Description
inactive_user_data	integer	The size that is physically used in the block storage and has a cold temperature, in bytes. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data or **.
inactive_user_data_percent	integer	The percentage of inactive user data in the block storage. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data_percent or **.
physical_used	integer	Total physical used size of an aggregate in bytes.
physical_used_percent	integer	Physical used percentage.
size	integer	Total usable space in bytes, not including WAFL reserve and aggregate snapshot reserve.
used	integer	Space used or reserved in bytes. Includes volume guarantees and aggregate metadata.

Name	Type	Description
used_including_snapshot_reserve	integer	Total used including the snapshot reserve, in bytes.
used_including_snapshot_reserve_percent	integer	Total used including the Snapshot reserve as a percentage.
used_percent	integer	Aggregate used percentage.
volume_deduplication_shared_count	integer	Amount of shared bytes counted by storage efficiency.
volume_deduplication_space_saved	integer	Amount of space saved in bytes by storage efficiency.
volume_deduplication_space_saved_percent	integer	Percentage of space saved by storage efficiency.
volume_footprints_percent	integer	A summation of volume footprints inside the aggregate, as a percentage. A volume's footprint is the amount of space being used for the volume in the aggregate.

cloud_storage

Name	Type	Description
used	integer	Used space in bytes in the cloud store. Only applicable for aggregates with a cloud store tier.

efficiency

Storage efficiency.

Name	Type	Description
auto_adaptive_compression_savings	boolean	Indicates whether or not aggregate has auto adaptive compression savings.
cross_volume_background_dedupe	boolean	Indicates whether or not cross volume background deduplication is enabled.

Name	Type	Description
cross_volume_dedupe_savings	boolean	Indicates whether or not aggregate has cross volume deduplication savings.
cross_volume_inline_dedupe	boolean	Indicates whether or not cross volume inline deduplication is enabled.
enable_workload_informed_tsse	boolean	Indicates whether Workload Informed TSSE is enabled on the system.
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)
wise_tsse_min_used_capacity_pct	integer	Minimum amount of used data in aggregate required to trigger cold compression on TSSE volumes.

efficiency_without_snapshots

Storage efficiency that does not include the savings provided by snapshots.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots_flexclones

Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
logical_used	integer	Logical used

Name	Type	Description
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

snapshot

Name	Type	Description
available	integer	Available space for snapshots in bytes
reserve_percent	integer	Percentage of space reserved for snapshots
total	integer	Total space for snapshots in bytes
used	integer	Space used by snapshots in bytes
used_percent	integer	Percentage of disk space used by snapshots

space

Name	Type	Description
block_storage	block_storage	
cloud_storage	cloud_storage	
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
footprint	integer	A summation of volume footprints (including volume guarantees), in bytes. This includes all of the volume footprints in the block_storage tier and the cloud_storage tier. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
snapshot	snapshot	

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the aggregate.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

aggregate

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.
cloud_storage	cloud_storage	Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
dr_home_node	dr_home_node	Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

Name	Type	Description
metric	metric	The most recent sample of I/O metrics for the aggregate.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snaplock_type	string	SnapLock type.
snapshot	snapshot	
space	space	
state	string	Operational state of the aggregate.
statistics	statistics	The real time I/O statistics for the aggregate.
uuid	string	Aggregate UUID.
volume-count	integer	Number of volumes in the aggregate.

action

Name	Type	Description
arguments	array[string]	Arguments present in the specified action message.
code	integer	Corrective action code of the specified action.
message	string	Specifies the corrective action to be taken to resolve the issue.

warning

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.

Name	Type	Description
code	integer	Warning code of the warning encountered.
message	string	Details of the warning encountered by the aggregate simulate query.

aggregate_warning

Name	Type	Description
action	action	
name	string	Name of the entity that returns the warning.
warning	warning	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a collection of aggregates for an entire cluster

POST `/storage/aggregates`

Introduced In: 9.6

Automatically creates aggregates based on an optimal layout recommended by the system. Alternatively, properties can be provided to create an aggregate according to the requested specification. This request starts a job and returns a link to that job.
POST operations will be blocked while one or more nodes in the cluster are simulating or implementing automatic aggregate creation.

Required properties

Properties are not required for this API. The following properties are only required if you want to specify properties for aggregate creation:

- `name` - Name of the aggregate.
- `node.name` or `node.uuid` - Node on which the aggregate will be created.
- `block_storage.primary.disk_count` - Number of disks to be used to create the aggregate.

Default values

If not specified in POST, the following default values are assigned. The remaining unspecified properties will receive system dependent default values.

- `block_storage.mirror.enabled` - *false*
- `snaplock_type` - *non_snaplock*

Related ONTAP commands

- `storage aggregate auto-provision`
- `storage aggregate create`

Example:

```
POST /api/storage/aggregates {"node": {"name": "node1"}, "name": "test",
"block_storage": {"primary": {"disk_count": "10"}}}
```

Parameters

Name	Type	In	Required	Description
disk_size	integer	query	False	If set, POST only selects disks of the specified size.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.

Name	Type	Description
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snaplock_type	string	SnapLock type.
snapshot	snapshot	
space	space	
state	string	Operational state of the aggregate.
uuid	string	Aggregate UUID.

Name	Type	Description
volume-count	integer	Number of volumes in the aggregate.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "block_storage": {
    "hybrid_cache": {
      "disk_count": 6,
      "disk_type": "string",
      "raid_size": 24,
      "raid_type": "string",
      "simulated_raid_groups": [
        {
          "name": "string"
        }
      ],
      "size": 1612709888,
      "storage_pools": [
        {
          "storage_pool": {
            "name": "storage_pool_1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "used": 26501122
    },
    "mirror": {
      "enabled": "",
      "state": "string"
    },
    "plexes": [
      {
        "name": "plex0"
      }
    ],
    "primary": {
      "checksum_style": "string",
      "disk_class": "performance",
      "disk_count": 8,
      "disk_type": "string",
      "raid_size": 16,
      "raid_type": "string",
      "simulated_raid_groups": [
```

```
        {
          "name": "string",
          "raid_type": "string"
        }
      ]
    },
    "storage_type": "string"
  },
  "create_time": "2018-01-01 11:00:00 -0500",
  "home_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "inactive_data_reporting": {
    "enabled": true,
    "start_time": "2019-12-12 11:00:00 -0500"
  },
  "inode_attributes": {
    "file_private_capacity": 31136,
    "file_public_capacity": 31136,
    "files_private_used": 502,
    "files_total": 31136,
    "files_used": 97,
    "max_files_available": 31136,
    "max_files_possible": 2844525,
    "max_files_used": 97,
    "used_percent": 5,
    "version": 4
  },
  "is_spare_low": "",
  "name": "node1_aggr_1",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "snaplock_type": "string",
  "snapshot": {
    "files_total": 10,
    "files_used": 3,
    "max_files_available": 5,
    "max_files_used": 50
  },
  "space": {
    "block_storage": {
      "aggregate_metadata": 2655,
      "aggregate_metadata_percent": 8,
```

```
      "available": 10156560384,
      "data_compacted_count": 1990000,
      "data_compaction_space_saved": 1996000,
      "data_compaction_space_saved_percent": 27,
      "full_threshold_percent": 0,
      "inactive_user_data": 304448,
      "inactive_user_data_percent": 0,
      "physical_used": 2461696,
      "physical_used_percent": 50,
      "size": 10156769280,
      "used": 2088960,
      "used_including_snapshot_reserve": 674685,
      "used_including_snapshot_reserve_percent": 35,
      "used_percent": 50,
      "volume_deduplication_shared_count": 1990000,
      "volume_deduplication_space_saved": 1996000,
      "volume_deduplication_space_saved_percent": 27,
      "volume_footprints_percent": 14
    },
    "cloud_storage": {
      "used": 402743264
    },
    "efficiency": {
      "logical_used": 0,
      "ratio": 0,
      "savings": 0,
      "wise_tsse_min_used_capacity_pct": 0
    },
    "efficiency_without_snapshots": {
      "logical_used": 0,
      "ratio": 0,
      "savings": 0
    },
    "efficiency_without_snapshots_flexclones": {
      "logical_used": 0,
      "ratio": 0,
      "savings": 0
    },
    "footprint": 608896,
    "snapshot": {
      "available": 2000,
      "reserve_percent": 20,
      "total": 5000,
      "used": 3000,
      "used_percent": 45
    }
```

```
    },
    "state": "string",
    "uuid": "string",
    "volume-count": 0
  }
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	
num_records	integer	Number of records
records	array[aggregate]	
warnings	array[aggregate_warning]	List of validation warnings and remediation advice for the aggregate simulate behavior.

Example response


```
{
  "job": {
    "uuid": "string"
  },
  "num_records": 1,
  "records": [
    {
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "block_storage": {
        "hybrid_cache": {
          "disk_count": 6,
          "disk_type": "string",
          "raid_size": 24,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string"
            }
          ],
          "size": 1612709888,
          "storage_pools": [
            {
              "storage_pool": {
                "name": "storage_pool_1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            }
          ],
          "used": 26501122
        },
        "mirror": {
          "enabled": "",
          "state": "string"
        },
        "plexes": [
          {
            "name": "plex0"
          }
        ],
        "primary": {
          "checksum_style": "string",
```

```
          "disk_class": "performance",
          "disk_count": 8,
          "disk_type": "string",
          "raid_size": 16,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string",
              "raid_type": "string"
            }
          ]
        },
        "storage_type": "string"
      },
      "create_time": "2018-01-01 11:00:00 -0500",
      "home_node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "inactive_data_reporting": {
        "enabled": true,
        "start_time": "2019-12-12 11:00:00 -0500"
      },
      "inode_attributes": {
        "file_private_capacity": 31136,
        "file_public_capacity": 31136,
        "files_private_used": 502,
        "files_total": 31136,
        "files_used": 97,
        "max_files_available": 31136,
        "max_files_possible": 2844525,
        "max_files_used": 97,
        "used_percent": 5,
        "version": 4
      },
      "is_spare_low": "",
      "name": "node1_aggr_1",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snaplock_type": "string",
      "snapshot": {
        "files_total": 10,
        "files_used": 3,
        "max_files_available": 5,
```

```
        "max_files_used": 50
      },
      "space": {
        "block_storage": {
          "aggregate_metadata": 2655,
          "aggregate_metadata_percent": 8,
          "available": 10156560384,
          "data_compacted_count": 1990000,
          "data_compaction_space_saved": 1996000,
          "data_compaction_space_saved_percent": 27,
          "full_threshold_percent": 0,
          "inactive_user_data": 304448,
          "inactive_user_data_percent": 0,
          "physical_used": 2461696,
          "physical_used_percent": 50,
          "size": 10156769280,
          "used": 2088960,
          "used_including_snapshot_reserve": 674685,
          "used_including_snapshot_reserve_percent": 35,
          "used_percent": 50,
          "volume_deduplication_shared_count": 1990000,
          "volume_deduplication_space_saved": 1996000,
          "volume_deduplication_space_saved_percent": 27,
          "volume_footprints_percent": 14
        },
        "cloud_storage": {
          "used": 402743264
        },
        "efficiency": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0,
          "wise_tsse_min_used_capacity_pct": 0
        },
        "efficiency_without_snapshots": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "efficiency_without_snapshots_flexclones": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "footprint": 608896,
        "snapshot": {
```

```
            "available": 2000,
            "reserve_percent": 20,
            "total": 5000,
            "used": 3000,
            "used_percent": 45
          }
        },
        "state": "string",
        "uuid": "string",
        "volume-count": 0
      }
    ],
    "warnings": [
      {
        "action": {
          "arguments": [
            "string"
          ],
          "message": "string"
        },
        "name": "string",
        "warning": {
          "arguments": [
            "string"
          ],
          "message": "string"
        }
      }
    ]
  }
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
460770	The aggregate create job failed to create the aggregate.
786438	Failed to create an aggregate on the node.
786439	An aggregate already uses the specified name.
786446	The node is not in cluster.
786468	VLDB is offline.
786819	The value is invalid for the specified option at the current privilege level.
786902	RAID-TEC aggregate is not fully supported.
786911	Not every node in the cluster has the Data ONTAP version required for the feature.
786973	The number of disks specified does not meet the minimum number of disks required for this operation.
787069	Node is setup for MetroCluster over IP configuration; creating an unmirrored aggregate is not supported in this configuration.
787092	The target field cannot be specified for this operation.
787267	The number of disks specified does not meet the minimum number of disks required for the creation of a new RAID group.
918138	Internal error. Failed to get encryption operation status.
1114292	The required SnapLock license is not installed.
2425736	No matching node found for the target UUID.
19726341	Not enough eligible spare disks are available on the node.
19726344	No recommendation can be made for this cluster.
19726357	Automatic aggregate creation is not supported on MetroCluster with Fibre Channel (FC).
19726358	Automatic aggregate creation is not supported on ONTAP Cloud.
19726373	Recommendation specified for creating aggregates is not current.
19726378	Failed to create recommended aggregates on one or more nodes.

Error Code	Description
19726382	Another provisioning operation is in progress on this cluster. Wait a few minutes, and try the operation again.
19726386	Encountered an error when retrieving licensing information on this cluster.
19726387	No recommendation can be provided for this cluster within the license capacity.
19726401	Aggregate recommendations are not supported when the DR group is not in the "normal" state.
19726402	Internal error. Unable to determine the MetroCluster configuration state.
19726403	Aggregate recommendation is not supported when there are no healthy target connections to remote storage.
19726544	POST on the aggregate endpoint is not supported on this version of ONTAP.
65537119	Key management is not configured for the admin SVM. Configure a key manager for the admin SVM.
196608055	Aggregate recommendation is not supported on this node because it does not support NetApp Aggregate Encryption (NAE).
196608206	Internal error. Failed to get encryption operation status.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
usable_size	integer	Usable size of each disk, in bytes.

storage_pool_reference

Shared Storage Pool

Name	Type	Description
name	string	
uuid	string	

storage_pools

Name	Type	Description
allocation_units_count	integer	Allocation count of storage pool.

Name	Type	Description
storage_pool	storage_pool_reference	Shared Storage Pool

hybrid_cache

Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.

Name	Type	Description
disk_count	integer	Number of disks used in the cache tier of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
disk_type	string	Type of disk being used by the aggregate's cache tier.
enabled	boolean	Specifies whether the aggregate uses HDDs with SSDs as a cache.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type for SSD cache of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
simulated_raid_groups	array[simulated_raid_groups]	
size	integer	Total usable space in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.
storage_pools	array[storage_pools]	List of storage pool properties and allocation_units_count for aggregate.
used	integer	Space used in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.

mirror

Name	Type	Description
enabled	boolean	Aggregate is SyncMirror protected
state	string	

plex_reference

Plex

Name	Type	Description
name	string	

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
data_disk_count	integer	Number of data disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
parity_disk_count	integer	Number of parity disks in RAID group.
raid_type	string	RAID type of the aggregate.
usable_size	integer	Usable size of each disk, in bytes.

primary

Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache

details.

Name	Type	Description
checksum_style	string	The checksum style used by the aggregate.
disk_class	string	The class of disks being used by the aggregate.
disk_count	integer	Number of disks used in the aggregate. This includes parity disks, but excludes disks in the hybrid cache.
disk_type	string	The type of disk being used by the aggregate.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type of the aggregate.
simulated_raid_groups	array[simulated_raid_groups]	

block_storage

Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
hybrid_cache	hybrid_cache	Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.
mirror	mirror	
plexes	array[plex_reference]	Plex reference for each plex in the aggregate.
primary	primary	Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.
storage_type	string	Type of aggregate.

Name	Type	Description
uses_partitions	boolean	If true, aggregate is using shared disks.

cloud_store

Cloud store

Name	Type	Description
name	string	
uuid	string	

cloud_storage_tier

Name	Type	Description
cloud_store	cloud_store	Cloud store
used	integer	Capacity used in bytes in the cloud store by this aggregate. This is a cached value calculated every 5 minutes.

cloud_storage

Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.

Name	Type	Description
attach_eligible	boolean	Specifies whether the aggregate is eligible for a cloud store to be attached.
migrate_threshold	integer	Specifies the minimum percentage of performance tier free space that must exist in order for migration of data from the capacity tier to performance tier to be allowed. Only valid for PATCH operations.
stores	array[cloud_storage_tier]	Configuration information for each cloud storage portion of the aggregate.

Name	Type	Description
tiering_fullness_threshold	integer	The percentage of space in the performance tier that must be used before data is tiered out to the cloud store. Only valid for PATCH operations.

data_encryption

Name	Type	Description
drive_protection_enabled	boolean	Specifies whether the aggregate uses self-encrypting drives with data protection enabled.
software_encryption_enabled	boolean	Specifies whether NetApp aggregate encryption is enabled. All data in the aggregate is encrypted.

dr_home_node

Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.

Name	Type	Description
name	string	
uuid	string	

home_node

Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.

Name	Type	Description
name	string	
uuid	string	

inactive_data_reporting

Name	Type	Description
start_time	string	Timestamp at which inactive data reporting was enabled on the aggregate.

inode_attributes

Name	Type	Description
file_private_capacity	integer	Number of files that can currently be stored on disk for system metadata files. This number will dynamically increase as more system files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
file_public_capacity	integer	Number of files that can currently be stored on disk for user-visible files. This number will dynamically increase as more user-visible files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_private_used	integer	Number of system metadata files used. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_total	integer	Maximum number of user-visible files that this referenced file system can currently hold. If the referenced file system is restricted or offline, a value of 0 is returned.

Name	Type	Description
files_used	integer	Number of user-visible files used in the referenced file system. If the referenced file system is restricted or offline, a value of 0 is returned.
max_files_available	integer	The count of the maximum number of user-visible files currently allowable on the referenced file system.
max_files_possible	integer	The largest value to which the maxfiles-available parameter can be increased by reconfiguration, on the referenced file system.
max_files_used	integer	The number of user-visible files currently in use on the referenced file system.
used_percent	integer	The percentage of disk space currently in use based on user-visible file count on the referenced file system.
version	integer	The inofile-version of the aggregate. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the aggregate.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Node where the aggregate currently resides.

Name	Type	Description
name	string	
uuid	string	

snapshot

Name	Type	Description
files_total	integer	Total files allowed in snapshots
files_used	integer	Total files created in snapshots

Name	Type	Description
max_files_available	integer	Maximum files available for snapshots
max_files_used	integer	Files in use by snapshots

block_storage

Name	Type	Description
aggregate_metadata	integer	Space used by different metafiles and internal operations inside the aggregate, in bytes.
aggregate_metadata_percent	integer	Aggregate metadata as a percentage.
available	integer	Space available in bytes.
data_compacted_count	integer	Amount of compacted data in bytes.
data_compaction_space_saved	integer	Space saved in bytes by compacting the data.
data_compaction_space_saved_percent	integer	Percentage saved by compacting the data.
full_threshold_percent	integer	The aggregate used percentage at which 'monitor.volume.full' EMS is generated.

Name	Type	Description
inactive_user_data	integer	The size that is physically used in the block storage and has a cold temperature, in bytes. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data or **.
inactive_user_data_percent	integer	The percentage of inactive user data in the block storage. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data_percent or **.
physical_used	integer	Total physical used size of an aggregate in bytes.
physical_used_percent	integer	Physical used percentage.
size	integer	Total usable space in bytes, not including WAFL reserve and aggregate snapshot reserve.
used	integer	Space used or reserved in bytes. Includes volume guarantees and aggregate metadata.

Name	Type	Description
used_including_snapshot_reserve	integer	Total used including the snapshot reserve, in bytes.
used_including_snapshot_reserve_percent	integer	Total used including the Snapshot reserve as a percentage.
used_percent	integer	Aggregate used percentage.
volume_deduplication_shared_count	integer	Amount of shared bytes counted by storage efficiency.
volume_deduplication_space_saved	integer	Amount of space saved in bytes by storage efficiency.
volume_deduplication_space_saved_percent	integer	Percentage of space saved by storage efficiency.
volume_footprints_percent	integer	A summation of volume footprints inside the aggregate, as a percentage. A volume's footprint is the amount of space being used for the volume in the aggregate.

cloud_storage

Name	Type	Description
used	integer	Used space in bytes in the cloud store. Only applicable for aggregates with a cloud store tier.

efficiency

Storage efficiency.

Name	Type	Description
auto_adaptive_compression_savings	boolean	Indicates whether or not aggregate has auto adaptive compression savings.
cross_volume_background_dedupe	boolean	Indicates whether or not cross volume background deduplication is enabled.

Name	Type	Description
cross_volume_dedupe_savings	boolean	Indicates whether or not aggregate has cross volume deduplication savings.
cross_volume_inline_dedupe	boolean	Indicates whether or not cross volume inline deduplication is enabled.
enable_workload_informed_tsse	boolean	Indicates whether Workload Informed TSSE is enabled on the system.
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)
wise_tsse_min_used_capacity_pct	integer	Minimum amount of used data in aggregate required to trigger cold compression on TSSE volumes.

efficiency_without_snapshots

Storage efficiency that does not include the savings provided by snapshots.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots_flexclones

Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
logical_used	integer	Logical used

Name	Type	Description
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

snapshot

Name	Type	Description
available	integer	Available space for snapshots in bytes
reserve_percent	integer	Percentage of space reserved for snapshots
total	integer	Total space for snapshots in bytes
used	integer	Space used by snapshots in bytes
used_percent	integer	Percentage of disk space used by snapshots

space

Name	Type	Description
block_storage	block_storage	
cloud_storage	cloud_storage	
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
footprint	integer	A summation of volume footprints (including volume guarantees), in bytes. This includes all of the volume footprints in the block_storage tier and the cloud_storage tier. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
snapshot	snapshot	

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the aggregate.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

aggregate

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snaplock_type	string	SnapLock type.
snapshot	snapshot	

Name	Type	Description
space	space	
state	string	Operational state of the aggregate.
uuid	string	Aggregate UUID.
volume-count	integer	Number of volumes in the aggregate.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

action

Name	Type	Description
arguments	array[string]	Arguments present in the specified action message.
code	integer	Corrective action code of the specified action.
message	string	Specifies the corrective action to be taken to resolve the issue.

warning

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	integer	Warning code of the warning encountered.
message	string	Details of the warning encountered by the aggregate simulate query.

aggregate_warning

Name	Type	Description
action	action	
name	string	Name of the entity that returns the warning.
warning	warning	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a collection of cloud stores used by an aggregate

GET `/storage/aggregates/{aggregate.uuid}/cloud-stores`

Introduced In: 9.6

Retrieves the collection of cloud stores used by an aggregate.

Related ONTAP commands

- `storage aggregate object-store show`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID

Name	Type	In	Required	Description
resync-progress	integer	query	False	Filter by resync-progress • Introduced in: 9.14
aggregate.name	string	query	False	Filter by aggregate.name • Introduced in: 9.9
availability_at_partner	string	query	False	Filter by availability_at_partner • Introduced in: 9.15
primary	boolean	query	False	Filter by primary
mirror_degraded	boolean	query	False	Filter by mirror_degraded
used	integer	query	False	Filter by used
unreclaimed_space_threshold	integer	query	False	Filter by unreclaimed_space_threshold
availability	string	query	False	Filter by availability
target.uuid	string	query	False	Filter by target.uuid
target.name	string	query	False	Filter by target.name
unavailable_reason.message	string	query	False	Filter by unavailable_reason.message • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[cloud_store]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "aggregate": {
        "name": "aggr1"
      },
      "availability": "string",
      "availability_at_partner": "string",
      "resync-progress": 0,
      "target": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "target1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "unavailable_reason": {
        "message": "string"
      },
      "unreclaimed_space_threshold": 20,
      "used": 0
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregate

Aggregate

Name	Type	Description
name	string	

target

Cloud target

Name	Type	Description
_links	_links	
name	string	
uuid	string	

unavailable_reason

Name	Type	Description
message	string	Indicates why the object store is unavailable.

cloud_store

Name	Type	Description
_links	_links	

Name	Type	Description
aggregate	aggregate	Aggregate
availability	string	Availability of the object store.
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.
resync-progress	integer	Resync progress of the mirror object store in percentage.
target	target	Cloud target
unavailable_reason	unavailable_reason	
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Attach an object store to an aggregate or add a second object store as a mirror

POST `/storage/aggregates/{aggregate.uuid}/cloud-stores`

Introduced In: 9.6

Attaches an object store to an aggregate, or adds a second object store as a mirror.

Required properties

- `target.uuid` or `target.name` - UUID or name of the cloud target.

Recommended optional properties

- `primary` - *true* if the object store is primary or *false* if it is a mirror.
- `allow_flexgroups` - Allow attaching object store to an aggregate containing FlexGroup constituents.
- `check_only` - Validate only and do not add the cloud store.

Default property values

- `primary` - *true*
- `allow_flexgroups` - *false*
- `check_only` - *false*

Related ONTAP commands

- `storage aggregate object-store attach`
- `storage aggregate object-store mirror`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID

Name	Type	In	Required	Description
allow_flexgroups	boolean	query	False	This optional parameter allows attaching object store to an aggregate containing FlexGroup constituents. The default value is false. Mixing FabricPools and non-FabricPools within a FlexGroup is not recommended. All aggregates hosting constituents of a FlexGroup should be attached to the object store.
check_only	boolean	query	False	Validate only and do not add the cloud store.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
aggregate	aggregate	Aggregate
availability	string	Availability of the object store.

Name	Type	Description
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.
resync-progress	integer	Resync progress of the mirror object store in percentage.
target	target	Cloud target
unavailable_reason	unavailable_reason	
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

Example request

```
{
  "aggregate": {
    "name": "aggr1"
  },
  "availability": "string",
  "availability_at_partner": "string",
  "resync-progress": 0,
  "target": {
    "name": "target1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "unavailable_reason": {
    "message": "string"
  },
  "unreclaimed_space_threshold": 20,
  "used": 0
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
787143	Object store is already attached to FabricPool.
787144	Aggregate is not a FabricPool.
787205	The operation failed because the previous unmirror operation on the aggregate is still in progress. Check that the previous unmirror operation is complete and try the command again.
787218	The specified object store does not exist.
7209876	Aggregate is already a FabricPool Aggregate.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregate

Aggregate

Name	Type	Description
name	string	

target

Cloud target

Name	Type	Description
name	string	
uuid	string	

unavailable_reason

Name	Type	Description
message	string	Indicates why the object store is unavailable.

cloud_store

Name	Type	Description
aggregate	aggregate	Aggregate
availability	string	Availability of the object store.
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.

Name	Type	Description
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.
resync-progress	integer	Resync progress of the mirror object store in percentage.
target	target	Cloud target
unavailable_reason	unavailable_reason	
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Remove a cloud target from an aggregate

DELETE `/storage/aggregates/{aggregate.uuid}/cloud-stores/{target.uuid}`

Introduced In: 9.6

Removes the specified cloud target from the aggregate. Only removal of a mirror is allowed. The primary cannot be removed. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate object-store unmirror`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID
target.uuid	string	path	True	Cloud target UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
3	Invalid operation

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the cloud store for an aggregate

GET `/storage/aggregates/{aggregate.uuid}/cloud-stores/{target.uuid}`

Introduced In: 9.6

Retrieves the cloud store for the aggregate using the specified cloud target UUID.

Related ONTAP commands

- `storage aggregate object-store show`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID
target.uuid	string	path	True	Cloud target UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
aggregate	aggregate	Aggregate
availability	string	Availability of the object store.
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.
resync-progress	integer	Resync progress of the mirror object store in percentage.
target	target	Cloud target
unavailable_reason	unavailable_reason	

Name	Type	Description
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "aggregate": {
    "name": "aggr1"
  },
  "availability": "string",
  "availability_at_partner": "string",
  "resync-progress": 0,
  "target": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "target1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "unavailable_reason": {
    "message": "string"
  },
  "unreclaimed_space_threshold": 20,
  "used": 0
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregate

Aggregate

Name	Type	Description
name	string	

target

Cloud target

Name	Type	Description
_links	_links	
name	string	
uuid	string	

unavailable_reason

Name	Type	Description
message	string	Indicates why the object store is unavailable.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a cloud store

PATCH `/storage/aggregates/{aggregate.uuid}/cloud-stores/{target.uuid}`

Introduced In: 9.6

Updates the cloud store specified by the UUID with the fields in the body. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate object-store modify`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID
target.uuid	string	path	True	Cloud target UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
availability	string	Availability of the object store.
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.

Name	Type	Description
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.
resync-progress	integer	Resync progress of the mirror object store in percentage.
unavailable_reason	unavailable_reason	
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

Example request

```
{
  "availability": "string",
  "availability_at_partner": "string",
  "resync-progress": 0,
  "unavailable_reason": {
    "message": "string"
  },
  "unreclaimed_space_threshold": 20,
  "used": 0
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
787154	The Object stores are currently not synchronized. Check the mirror resync status.
787156	Modifying the attributes of a mirror object store is not allowed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregate

Aggregate

Name	Type	Description
name	string	

target

Cloud target

Name	Type	Description
name	string	
uuid	string	

unavailable_reason

Name	Type	Description
message	string	Indicates why the object store is unavailable.

cloud_store

Name	Type	Description
availability	string	Availability of the object store.
availability_at_partner	string	Availability of the object store at the HA partner.
mirror_degraded	boolean	This field identifies if the mirror cloud store is in sync with the primary cloud store of a FabricPool.
primary	boolean	This field indicates whether the cloud store is the primary cloud store of a mirrored FabricPool.

Name	Type	Description
resync-progress	integer	Resync progress of the mirror object store in percentage.
unavailable_reason	unavailable_reason	
unreclaimed_space_threshold	integer	Usage threshold for reclaiming unused space in the cloud store. Valid values are 0 to 99. The default value depends on the provider type. This can be specified in PATCH but not POST.
used	integer	The amount of object space used. Calculated every 5 minutes and cached.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage aggregate plexes

Storage aggregates aggregate.uuid plexes endpoint overview

Overview

The Storage Aggregate Plex API provides relevant state information for each plex in the aggregate.
For each plex, details are provided for the RAID groups in the plex and the disks that make up each RAID group.

Examples

Retrieving all aggregates and plexes

The following example shows the response with a list of aggregates and plexes:

```
# the API:
/storage/aggregates/{aggregate.uuid}/plexes

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/*/plexes" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "aggregate": {
      "uuid": "04b7296e-a302-42a6-a2a9-dda6be054b29",
      "name": "test2"
    },
    "name": "plex0"
  },
  {
    "aggregate": {
      "uuid": "04b7296e-a302-42a6-a2a9-dda6be054b29",
      "name": "test2"
    },
    "name": "plex1",
  },
  {
    "aggregate": {
      "uuid": "66c4b221-65ff-4211-9b58-ada3c6fc41af",
      "name": "test"
    },
    "name": "plex0"
  },
  {
```

```
    "aggregate": {
      "uuid": "66c4b221-65ff-4211-9b58-ada3c6fc41af",
      "name": "test"
    },
    "name": "plex1"
  },
  {
    "aggregate": {
      "uuid": "7ee89e48-5d81-4609-9e1b-5d8d0995a886",
      "name": "aggr1",
    },
    "name": "plex0",
  },
  {
    "aggregate": {
      "uuid": "8bb2e3bf-c4f1-4748-9033-ca9231cf1c40",
      "name": "test3",
    },
    "name": "plex0",
  },
  {
    "aggregate": {
      "uuid": "8bb2e3bf-c4f1-4748-9033-ca9231cf1c40",
      "name": "test3",
    },
    "name": "plex1"
  },
  {
    "aggregate": {
      "uuid": "8f13de5c-99cf-4ada-884c-3cc32deb304a",
      "name": "aggr2",
    },
    "name": "plex0"
  }
],
"num_records": 8
}
```


Retrieving a specific plex in all aggregates

The following example shows the response with a list of specific plexes in all aggregates:

```
# the API:
/storage/aggregates/{aggregate.uuid}/plexes/{name}

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/*/plexes/plex0" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "aggregate": {
      "uuid": "04b7296e-a302-42a6-a2a9-dda6be054b29",
      "name": "test2"
    },
    "name": "plex0"
  },
  {
    "aggregate": {
      "uuid": "66c4b221-65ff-4211-9b58-ada3c6fc41af",
      "name": "test"
    },
    "name": "plex0"
  },
  {
    "aggregate": {
      "uuid": "7ee89e48-5d81-4609-9e1b-5d8d0995a886",
      "name": "aggr1",
    },
    "name": "plex0",
  },
  {
    "aggregate": {
      "uuid": "8bb2e3bf-c4f1-4748-9033-ca9231cf1c40",
      "name": "test3",
    },
    "name": "plex0",
  },
  {
    "aggregate": {
      "uuid": "8f13de5c-99cf-4ada-884c-3cc32deb304a",
      "name": "aggr2",
    },
    "name": "plex0"
  }
],
"num_records": 8
}
```

Retrieving the list of plexes in an aggregate

The following example shows the response with the list of plexes in an aggregate:

```
# The API:
/api/storage/aggregates/{uuid}/plexes

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-4a9f-
8f01-712f626c983c/plexes" -H "accept: application/json"

# The response:
{
"records": [
  {
    "name": "plex0",
  },
  {
    "name": "plex4",
  }
],
"num_records": 2
}
```

Retrieving a specific plex in an aggregate

The following example shows the response when requesting a specific plex of an aggregate:

```
# The API:
/api/storage/aggregates/{uuid}/plexes/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-4a9f-
8f01-712f626c983c/plexes/plex0" -H "accept: application/json"

# The response:
{
"aggregate": {
  "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
  "name": "test1",
},
"name": "plex0",
"online": true,
"state": "normal",
"pool": "pool0",
"resync": {
```

```
    "active": false
  },
  "raid_groups": [
    {
      "name": "rg0",
      "raid_type": "raid_dp",
      "cache_tier": false,
      "degraded": false,
      "recomputing_parity": {
        "active": false
      },
      "reconstruct": {
        "active": false
      },
      "disks": [
        {
          "position": "dparity",
          "state": "normal",
          "type": "ssd",
          "usable_size": 86769664,
          "disk": {
            "name": "1.1.29",
          }
        },
        {
          "position": "parity",
          "state": "normal",
          "type": "ssd",
          "usable_size": 86769664,
          "disk": {
            "name": "1.1.4",
          }
        },
        {
          "position": "data",
          "state": "normal",
          "type": "ssd",
          "usable_size": 86769664,
          "disk": {
            "name": "1.1.30",
          }
        },
        {
          "position": "data",
          "state": "normal",
          "type": "ssd",
```

```
        "usable_size": 86769664,
        "disk": {
          "name": "1.1.5",
        }
      },
      {
        "position": "data",
        "state": "normal",
        "type": "ssd",
        "usable_size": 86769664,
        "disk": {
          "name": "1.1.31",
        }
      },
      {
        "position": "data",
        "state": "normal",
        "type": "ssd",
        "usable_size": 86769664,
        "disk": {
          "name": "1.1.6",
        }
      }
    ]
  }
]
}
```


Retrieve a collection of plexes for an aggregate

GET `/storage/aggregates/{aggregate.uuid}/plexes`

Introduced In: 9.6

Retrieves the collection of plexes for the specified aggregate.

Related ONTAP commands

- `storage aggregate plex show`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID
state	string	query	False	Filter by state

Name	Type	In	Required	Description
aggregate.name	string	query	False	Filter by aggregate.name
name	string	query	False	Filter by name
online	boolean	query	False	Filter by online
resync.active	boolean	query	False	Filter by resync.active
resync.level	string	query	False	Filter by resync.level
resync.percent	integer	query	False	Filter by resync.percent
raid_groups.disks.position	string	query	False	Filter by raid_groups.disks.position • Introduced in: 9.7
raid_groups.disks.disk.name	string	query	False	Filter by raid_groups.disks.disk.name • Introduced in: 9.7
raid_groups.disks.type	string	query	False	Filter by raid_groups.disks.type • Introduced in: 9.7
raid_groups.disks.state	string	query	False	Filter by raid_groups.disks.state • Introduced in: 9.7

Name	Type	In	Required	Description
raid_groups.disks.usable_size	integer	query	False	Filter by raid_groups.disks.usable_size • Introduced in: 9.7
raid_groups.reconstruct.percent	integer	query	False	Filter by raid_groups.reconstruct.percent • Introduced in: 9.7
raid_groups.reconstruct.active	boolean	query	False	Filter by raid_groups.reconstruct.active • Introduced in: 9.7
raid_groups.raid_type	string	query	False	Filter by raid_groups.raid_type • Introduced in: 9.9
raid_groups.cache_tier	boolean	query	False	Filter by raid_groups.cache_tier • Introduced in: 9.7
raid_groups.name	string	query	False	Filter by raid_groups.name • Introduced in: 9.7
raid_groups.degraded	boolean	query	False	Filter by raid_groups.degraded • Introduced in: 9.7

Name	Type	In	Required	Description
raid_groups.recomputing_parity.percent	integer	query	False	Filter by raid_groups.recomputing_parity.percent • Introduced in: 9.7
raid_groups.recomputing_parity.active	boolean	query	False	Filter by raid_groups.recomputing_parity.active • Introduced in: 9.7
pool	string	query	False	Filter by pool
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[plex]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "name": "plex0",
      "pool": "string",
      "raid_groups": [
        {
          "disks": [
            {
              "disk": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "1.0.1"
```

```
                },
                "position": "string",
                "state": "string",
                "type": "ssd",
                "usable_size": 947912704
              }
            ],
            "name": "rg0",
            "raid_type": "raid_dp",
            "recomputing_parity": {
              "percent": 10
            },
            "reconstruct": {
              "percent": 10
            }
          }
        ],
        "resync": {
          "level": "string",
          "percent": 10
        },
        "state": "string"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

disk

Disk

Name	Type	Description
_links	_links	
name	string	

raid_group_disk

Name	Type	Description
disk	disk	Disk
position	string	The position of the disk within the RAID group.
state	string	The state of the disk within the RAID group.
type	string	Disk interface type
usable_size	integer	Size in bytes that is usable by the aggregate.

recomputing_parity

Name	Type	Description
active	boolean	RAID group is recomputing parity
percent	integer	Recomputing parity percentage

reconstruct

Name	Type	Description
active	boolean	One or more disks in this RAID group are being reconstructed.
percent	integer	Reconstruct percentage

raid_group

Name	Type	Description
cache_tier	boolean	RAID group is a cache tier

Name	Type	Description
degraded	boolean	RAID group is degraded. A RAID group is degraded when at least one disk from that group has failed or is offline.
disks	array[raid_group_disk]	
name	string	RAID group name
raid_type	string	RAID type of the raid group.
recomputing_parity	recomputing_parity	
reconstruct	reconstruct	

resync

Name	Type	Description
active	boolean	Plex is being resynchronized to its mirrored plex
level	string	Plex resyncing level
percent	integer	Plex resyncing percentage

plex

Name	Type	Description
aggregate	aggregate	Aggregate
name	string	Plex name
online	boolean	Plex is online
pool	string	SyncMirror pool assignment
raid_groups	array[raid_group]	
resync	resync	
state	string	Plex state

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a plex specified by the aggregate UUID and plex name

GET `/storage/aggregates/{aggregate.uuid}/plexes/{name}`

Introduced In: 9.6

Retrieves the plex specified by the aggregate UUID and plex name.

Related ONTAP commands

- `storage aggregate plex show`

Parameters

Name	Type	In	Required	Description
aggregate.uuid	string	path	True	Aggregate UUID
name	string	path	True	Plex name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
aggregate	aggregate	Aggregate
name	string	Plex name
online	boolean	Plex is online

Name	Type	Description
pool	string	SyncMirror pool assignment
raid_groups	array[raid_group]	
resync	resync	
state	string	Plex state

Example response


```
{
  "aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "plex0",
  "pool": "string",
  "raid_groups": [
    {
      "disks": [
        {
          "disk": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "1.0.1"
          },
          "position": "string",
          "state": "string",
          "type": "ssd",
          "usable_size": 947912704
        }
      ],
      "name": "rg0",
      "raid_type": "raid_dp",
      "recomputing_parity": {
        "percent": 10
      },
      "reconstruct": {
        "percent": 10
      }
    }
  ],
  "resync": {
    "level": "string",
    "percent": 10
  },
```

```
  "state": "string"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

disk

Disk

Name	Type	Description
_links	_links	
name	string	

raid_group_disk

Name	Type	Description
disk	disk	Disk
position	string	The position of the disk within the RAID group.
state	string	The state of the disk within the RAID group.
type	string	Disk interface type
usable_size	integer	Size in bytes that is usable by the aggregate.

recomputing_parity

Name	Type	Description
active	boolean	RAID group is recomputing parity
percent	integer	Recomputing parity percentage

reconstruct

Name	Type	Description
active	boolean	One or more disks in this RAID group are being reconstructed.
percent	integer	Reconstruct percentage

raid_group

Name	Type	Description
cache_tier	boolean	RAID group is a cache tier
degraded	boolean	RAID group is degraded. A RAID group is degraded when at least one disk from that group has failed or is offline.
disks	array[raid_group_disk]	
name	string	RAID group name
raid_type	string	RAID type of the raid group.
recomputing_parity	recomputing_parity	
reconstruct	reconstruct	

resync

Name	Type	Description
active	boolean	Plex is being resynchronized to its mirrored plex
level	string	Plex resyncing level
percent	integer	Plex resyncing percentage

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage aggregates

Storage aggregates UUID endpoint overview

Updating storage aggregates

The PATCH operation is used to modify properties of the aggregate. There are several properties that can be modified on an aggregate. Only one property can be modified for each PATCH request.
PATCH operations on the aggregate's disk count will be blocked while one or more nodes in the cluster are simulating or implementing automatic aggregate creation.

Aggregates are automatically managed in the ASA r2 system. Therefore, PATCH and DELETE operations are not supported in ASA r2.

The following is a list of properties that can be modified using the PATCH operation including a brief description for each:

- name - This property can be changed to rename the aggregate.
- node.name and node.uuid - Either property can be updated in order to relocate the aggregate to a different node in the cluster.
- state - This property can be changed to 'online' or 'offline'. Setting an aggregate 'offline' would automatically offline all the volumes currently hosted on the aggregate.
- block_storage.mirror.enabled - This property can be changed from 'false' to 'true' in order to mirror the aggregate, if the system is capable of doing so.
- block_storage.primary.disk_count - This property can be updated to increase the number of disks in an aggregate.
- block_storage.primary.raid_size - This property can be updated to set the desired RAID size.
- block_storage.primary.raid_type - This property can be updated to set the desired RAID type.

- cloud_storage.tiering_fullness_threshold - This property can be updated to set the desired tiering fullness threshold if using FabricPool.
- cloud_storage.migrate_threshold - This property can be updated to set the desired migrate threshold if using FabricPool.
- data_encryption.software_encryption_enabled - This property enables or disables NAE on the aggregate.
- block_storage.hybrid_cache.storage_pools.allocation_units_count - This property can be updated to add a storage pool to the aggregate specifying the number of allocation units.
- block_storage.hybrid_cache.storage_pools.name - This property can be updated to add a storage pool to the aggregate specifying the storage pool name. block_storage.hybrid_cache.storage_pools.uuid or this field must be specified with block_storage.hybrid_cache.storage_pools.allocation_units_count.
- block_storage.hybrid_cache.storage_pools.uuid - This property can be updated to add a storage pool to the aggregate specifying the storage pool uuid. block_storage.hybrid_cache.storage_pools.name or this field must be specified with block_storage.hybrid_cache.storage_pools.allocation_units_count.
- block_storage.hybrid_cache.raid_size - This property can be updated to set the desired RAID size. This property can also be specified on the first time addition of a storage pool to the aggregate.
- block_storage.hybrid_cache.raid_type - This property can be updated to set the desired RAID type of a physical SSD Flash Pool. This property can also be specified on the first time addition of a storage pool to the aggregate. When specifying a raidtype of raid4, the node is required to have spare SSDs for the storage pool as well.
- block_storage.hybrid_cache.disk_count - This property can be specified on the first time addition of physical SSD cache to the aggregate. It can also be updated to increase the number of disks in the physical SSD cache of a hybrid aggregate.

Aggregate expansion

The PATCH operation also supports automatically expanding an aggregate based on the spare disks which are present within the system. Running PATCH with the query "auto_provision_policy" set to "expand" starts the recommended expansion job. In order to see the expected change in capacity before starting the job, call GET on an aggregate instance with the query "auto_provision_policy" set to "expand".

Manual simulated aggregate expansion

The PATCH operation also supports simulated manual expansion of an aggregate.
Running PATCH with the query "simulate" set to "true" and "block_storage.primary.disk_count" set to the final disk count will start running the prechecks associated with expanding the aggregate to the proposed size.
The response body will include information on how many disks the aggregate can be expanded to, any associated warnings, along with the proposed final size of the aggregate.

Deleting storage aggregates

If volumes exist on an aggregate, they must be deleted or moved before the aggregate can be deleted.
See the /storage/volumes API for details on moving or deleting volumes.

Adding a storage pool to an aggregate

A storage pool can be added to an aggregate by patching the field "block_storage.hybrid_cache.storage_pools.allocation_units_count" while also specifying the specific storage pool using the "block_storage.hybrid_cache.storage_pools.name" or "block_storage.hybrid_cache.storage_pools.uuid".
Subsequent patches to the aggregate can be completed to increase allocation unit counts or adding additional storage pools. On the first time addition of a storage pool to the aggregate, the raidtype

can be optionally specified using the "block_storage.hybrid_cache.raid_type" field.

Adding physical SSD cache capacity to an aggregate

The PATCH operation supports addition of a new physical SSD cache to an aggregate. It also supports expansion of existing physical SSD cache in the hybrid aggregate.
Running PATCH with "block_storage.hybrid_cache.disk_count" set to the final disk count will expand the physical SSD cache of the hybrid aggregate to the proposed size.
The RAID type can be optionally specified using the "block_storage.hybrid_cache.raid_type" field.
The RAID size can be optionally specified using the "block_storage.hybrid_cache.raid_size" field.
These operations can also be simulated by setting the query "simulate" to "true".

Examples

Retrieving a specific aggregate from the cluster

The following example shows the response of the requested aggregate. If there is no aggregate with the requested UUID, an error is returned.

```
# The API:
/api/storage/aggregates/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/870dd9f2-bdfa-4167-
b692-57d1cec874d4" -H "accept: application/json"

# The response:
{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "test1",
"node": {
  "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
  "name": "node-1",
},
"home_node": {
  "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
  "name": "node-1",
},
"space": {
  "block_storage": {
    "size": 235003904,
    "available": 191942656,
    "used": 43061248,
    "full_threshold_percent": 98,
    "physical_used": 5271552,
    "physical_used_percent": 1,
    "volume_footprints_percent": 14,
```

```
      "aggregate_metadata": 2655,
      "aggregate_metadata_percent": 8,
      "used_including_snapshot_reserve": 674685,
      "used_including_snapshot_reserve_percent": 35,
      "data_compacted_count": 666666,
      "data_compaction_space_saved": 654566,
      "data_compaction_space_saved_percent": 47,
      "volume_deduplication_shared_count": 567543,
      "volume_deduplication_space_saved": 23765,
      "volume_deduplication_space_saved_percent": 32,
      "used_percent": 50,
    },
    "snapshot": {
      "used_percent": 45,
      "available": 2000,
      "total": 5000,
      "used": 3000,
      "reserve_percent": 20
    },
    "cloud_storage": {
      "used": 0
    },
    "efficiency": {
      "savings": 1408029,
      "ratio": 6.908119720880661,
      "logical_used": 1646350,
      "cross_volume_background_dedupe": true,
      "cross_volume_inline_dedupe": false,
      "cross_volume_dedupe_savings": true,
      "auto_adaptive_compression_savings": false,
      "enable_workload_informed_tsse": true,
      "wise_tsse_min_used_capacity_pct": 2
    },
    "efficiency_without_snapshots": {
      "savings": 0,
      "ratio": 1,
      "logical_used": 737280
    },
    "efficiency_without_snapshots_flexclones": {
      "savings": 5000,
      "ratio": 2,
      "logical_used": 10000
    }
  },
  "snapshot": {
    "files_total": 10,
```

```
    "files_used": 3,
    "max_files_available": 5,
    "max_files_used": 50
  },
  "state": "online",
  "snaplock_type": "non_snaplock",
  "create_time": "2018-12-04T15:40:38-05:00",
  "data_encryption": {
    "software_encryption_enabled": false,
    "drive_protection_enabled": false
  },
  "block_storage": {
    "uses_partitions": false,
    "storage_type": "vmdisk",
    "primary": {
      "disk_count": 6,
      "disk_class": "solid_state",
      "raid_type": "raid_dp",
      "raid_size": 24,
      "checksum_style": "block",
      "disk_type": "ssd"
    },
    "hybrid_cache": {
      "enabled": false
    },
    "mirror": {
      "enabled": false,
      "state": "unmirrored"
    },
    "plexes": [
      {
        "name": "plex0",
      }
    ]
  },
  "cloud_storage": {
    "attach_eligible": false
  },
  "inode_attributes": {
    "files_total": 31136,
    "files_used": 97,
    "max_files_available": 31136,
    "max_files_possible": 2844525,
    "max_files_used": 97,
    "used_percent": 5
  },
```

```
"volume_count": 0,
}
```

Retrieving statistics and metric for an aggregate

In this example, the API returns the "statistics" and "metric" properties for the aggregate requested.

```
#The API:
/api/storage/aggregates/{uuid}?fields=statistics,metric

#The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/538bf337-1b2c-11e8-
bad0-005056b48388?fields=statistics,metric" -H "accept: application/json"

#The response:
{
"uuid": "538bf337-1b2c-11e8-bad0-005056b48388",
"name": "aggr4",
"metric": {
     "timestamp": "2019-07-08T22:16:45Z",
     "duration": "PT15S",
     "status": "ok",
     "throughput": {
       "read": 7099,
       "write": 840226,
       "other": 193293789,
       "total": 194141115
       },
     "latency": {
       "read": 149,
       "write": 230,
       "other": 123,
       "total": 124
     },
     "iops": {
       "read": 1,
       "write": 17,
       "other": 11663,
       "total": 11682
     },
 },
  "statistics": {
     "timestamp": "2019-07-08T22:17:09Z",
     "status": "ok",
     "throughput_raw": {
       "read": 3106045952,
```

```
        "write": 63771742208,
        "other": 146185560064,
        "total": 213063348224
      },
      "latency_raw": {
        "read": 54072313,
        "write": 313354426,
        "other": 477201985,
        "total": 844628724
      },
      "iops_raw": {
        "read": 328267,
        "write": 1137230,
        "other": 1586535,
        "total": 3052032
      }
    },
  }
```


For more information and examples on viewing historical performance metrics for any given aggregate, see DOC /storage/aggregates/{uuid}/metrics

Simulating aggregate expansion

The following example shows the response for a simulated data aggregate expansion based on the values of the 'block_storage.primary.disk_count' attribute passed in.
The query does not modify the existing aggregate but returns how the aggregate will look after the expansion along with any associated warnings.
Simulated data aggregate expansion will be blocked while one or more nodes in the cluster are simulating or implementing automatic aggregate creation.
This will be reflected in the following attributes:

- space.block_storage.size - Total usable space in bytes, not including WAFL reserve and aggregate snapshot reserve.
- block_storage.primary.disk_count - Number of disks that could be used to create the aggregate.

```
# The API:
/api/storage/aggregates/{uuid}?simulate=true

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/cae60cfe-deae-
42bd-babb-ef437d118314?simulate=true" -H "accept: application/json" -d
"{\"block_storage\": {\"primary\": {\"disk_count\": 13}}}"

# The response:
{
"warnings": [
```

```
  {
    "name": "node_2_SSD_1",
    "warning": {
      "message": "One or more disks will not be added. 10 disks specified,
9 disks will be added.",
      "code": 787170,
      "arguments": [
        "10",
        "9"
      ]
    }
  }
],
"num_records": 1,
"records": [
  {
    "uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
    "name": "node_2_SSD_1",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2"
    },
    "space": {
      "block_storage": {
        "size": 1116180480
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 12,
        "disk_class": "solid_state",
        "raid_type": "raid_dp",
        "disk_type": "ssd",
        "raid_size": 12,
        "simulated_raid_groups": [
           {
             "name": "test/plex0/rg0",
             "existing_parity_disk_count": 2,
             "added_parity_disk_count": 0,
             "existing_data_disk_count": 1,
             "added_data_disk_count": 9,
             "usable_size": 12309487,
             "is_partition": false
           }
         ]
      },
```

```
      "hybrid_cache": {
        "enabled": false
      },
      "mirror": {
        "enabled": false
      }
    },
  }
]
}
```

Manual aggregate expansion with disk size query

The following example shows the response for aggregate expansion based on the values of the 'block_storage.hybrid_cache.disk_count' attribute based on the disk size passed in.

```
# The API:
/api/storage/aggregate/{uuid}?disk_size={disk_size}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/aggregates/cae60cfe-deae-
42bd-babb-ef437d118314?disk_size=1902379008" -H "accept: application/json"
-d "{\"block_storage\": {\"hybrid_cache\": {\"disk_count\": 4}}}"

# The response:
{
"job": {
  "uuid": "c103d15e-730b-11e8-a57f-005056b465d6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c103d15e-730b-11e8-a57f-005056b465d6"
    }
  }
}
}
```

Simulating a manual aggregate expansion with disk size query

The following example shows the response for a manual aggregate expansion based on the values of the 'block_storage.hybrid_cache.disk_count' attribute based on the disk size passed in.
The query internally maps out the appropriate expansion as well as warnings that may be associated for the hybrid enabled aggregate.

```
# The API:
/api/storage/aggregate/{uuid}?simulate=true&disk_size=1902379008
```

```
# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/aggregates/cae60cfe-deae-
42bd-babb-ef437d118314?simulate=true&disk_size=1902379008" -H "accept:
application/json" -d "{\"block_storage\": {\"hybrid_cache\":
{\"disk_count\": 4}}}"

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
    "name": "ag1",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4046dda8-f802-11e8-8f6d-
005056bb2030"
        }
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 4,
        "disk_class": "virtual",
        "raid_type": "raid_dp",
        "disk_type": "vm_disk",
      },
      "hybrid_cache": {
        "disk_type": "ssd",
        "enabled": true,
        "disk_count": 4,
        "raid_type": "raid_dp",
        "size": 3761766400,
        "simulated_raid_groups": [
          {
            "name": "test/plex0/rg0",
            "existing_parity_disk_count": 2,
            "existing_data_disk_count": 1,
            "added_parity_disk_count": 0,
            "added_data_disk_count": 1,
            "usable_size": 1880883200,
            "is_partition": false
          },
```

```
        ]
      },
      "mirror": {
        "enabled": false
      },
      "_links": {
        "self": {
          "href": "/api/storage/aggregates/cae60cfe-deae-42bd-babb-
ef437d118314"
        }
      }
    }
  }
]
}
```

Simulating a manual aggregate expansion with raid group query

The following example shows the response for a manual aggregate expansion based on the values of the 'block_storage.primary.disk_count' attribute passed in.
The query internally maps out the appropriate expansion as well as warnings that may be associated and lays out the new raidgroups in a more detailed view. An additional query can be passed in to specify raidgroup addition by new raidgroup, all raidgroups or a specific raidgroup.

```
# The API:
/api/storage/aggregate/{uuid}?simulate=true&raid_group=[new&#124;all&#124;
rgX]

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/aggregates/cae60cfe-deae-
42bd-babb-ef437d118314?simulate=true&raid_group=new" -H "accept:
application/json" -d "{\"block_storage\": {\"primary\": {\"disk_count\":
24}}}"

# The response:
{
"warnings": [
  {
    "name": "test",
    "warning": {
      "code": 11,
      "message": "Number of unassigned disks attached to node \"node-2\":
6.",
      "arguments": [
        "6",
        "node-2"
```

```
      ]
    }
  }
],
"num_records": 1,
"records": [
  {
    "uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
    "name": "test",
    "node": {
      "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
      "name": "node-2"
    },
    "space": {
      "block_storage": {
        "size": 33292025856
      }
    },
    "block_storage": {
      "primary": {
        "disk_count": 24,
        "disk_class": "solid_state",
        "raid_type": "raid_dp",
        "disk_type": "ssd",
        "raid_size": 24,
        "simulated_raid_groups": [
           {
             "name": "test/plex0/rg0",
             "existing_parity_disk_count": 0,
             "added_parity_disk_count": 2,
             "existing_data_disk_count": 0,
             "added_data_disk_count": 10,
             "usable_size": 12309487,
             "is_partition": false
           },
           {
             "name": "test/plex1/rg1",
             "existing_parity_disk_count": 0,
             "added_parity_disk_count": 2,
             "existing_data_disk_count": 0,
             "added_data_disk_count": 10,
             "usable_size": 12309487,
             "is_partition": false
           }
         ]
      },
```

```
      "hybrid_cache": {
        "enabled": false
      },
      "mirror": {
        "enabled": false
      }
    }
  }
]
}
```


Retrieving the usable spare information for the cluster

The following example shows the response from retrieving usable spare information for the expansion of this particular aggregate. The output is restricted to only spares that are compatible with this aggregate.

```
# The API:
/api/storage/aggregates?show_spares=true&uuid={uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates?uuid=cae60cfe-deae-
42bd-babb-ef437d118314&show_spares=true" -H "accept: application/json"

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "node": {
      "uuid": "0cdd84fa-b99c-11eb-b0ed-005056bb4fc2",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 3720609792,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "usable": 12,
    "layout_requirements": [
      {
        "raid_type": "raid_dp",
        "default": true,
        "aggregate_min_disks": 3,
        "raid_group": {
          "min": 3,
          "max": 28,
          "default": 24
        }
      }
    ]
  }
]
}
```

Retrieving the SSD spare count for the cluster

The following example shows the response from retrieving SSD spare count information for the expansion of this particular aggregate's hybrid cache tier. The output is restricted to only spares that are compatible with this aggregate.

```
# The API:
/api/storage/aggregates?show_spares=true&uuid={uuid}&flash_pool_eligible=t
rue

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "node": {
      "uuid": "c35c5975-cbcb-11ec-a3e1-005056bbdb46",
      "name": "node-2"
    },
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 1902379008,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "is_partition": false,
    "usable": 1,
    "layout_requirements": [
      {
        "raid_type": "raid4",
        "default": true,
        "aggregate_min_disks": 2,
        "raid_group": {
          "min": 2,
          "max": 14,
          "default": 8
        }
      }
    ]
  }
]
}
```

Retrieving a recommendation for an aggregate expansion

The following example shows the response with the recommended data aggregate expansion based on what disks are present within the system.
The query does not modify the existing aggregate but returns how the aggregate will look after the expansion.
The recommendation will be reflected in the attributes - 'space.block_storage.size' and 'block_storage.primary.disk_count'.
Recommended data aggregate expansion will be blocked while one or more nodes in the cluster are simulating or implementing automatic aggregate creation.

```
# The API:
/api/storage/aggregates/{uuid}?auto_provision_policy=expand

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/cae60cfe-deae-42bd-
babb-ef437d118314?auto_provision_policy=expand" -H "accept:
application/json"

# The response:
{
"uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
"name": "node_2_SSD_1",
"node": {
  "uuid": "4046dda8-f802-11e8-8f6d-005056bb2030",
  "name": "node-2"
},
"space": {
  "block_storage": {
    "size": 1116180480
  }
},
"block_storage": {
  "primary": {
    "disk_count": 12,
    "disk_class": "solid_state",
    "raid_type": "raid_dp",
    "disk_type": "ssd",
    "raid_size": 24,
    "simulated_raid_groups": [
       {
         "name": "test/plex0/rg0",
         "parity_disk_count": 2,
         "data_disk_count": 10,
         "usable_size": 12309487,
         "is_partition": false
       }
     ]
  },
  "hybrid_cache": {
    "enabled": false
  },
  "mirror": {
    "enabled": false
  }
}
```

```
}
```

Updating an aggregate in the cluster

The following example shows the workflow of adding disks to the aggregate.

Step 1: Check the current disk count on the aggregate.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-4a9f-
8f01-712f626c983c?fields=block_storage.primary.disk_count" -H "accept:
application/json"

# The response:
{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "test1",
"block_storage": {
  "primary": {
    "disk_count": 6
  }
},
}
```

Step 2: Update the aggregate with the new disk count in 'block_storage.primary.disk_count'. The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/aggregates

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-
4a9f-8f01-712f626c983c" -H "accept: application/hal+json" -d
"{\"block_storage\": {\"primary\": {\"disk_count\": 8}}}"

# The response:
{
"job": {
  "uuid": "c103d15e-730b-11e8-a57f-005056b465d6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c103d15e-730b-11e8-a57f-005056b465d6"
    }
  }
}
}
```

Step 3: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-4a9f-
8f01-712f626c983c?fields=block_storage.primary.disk_count" -H "accept:
application/json"

# The response:
{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "test1",
"block_storage": {
  "primary": {
    "disk_count": 8
  }
},
}
```

Adding a storage pool to an aggregate

The following example shows how to add cache capacity from an existing storage pool to an aggregate.
Step 1: Update the aggregate with the new storage pool allocation unit in

'block_storage.hybrid_cache.storage_pools.allocation_units_count'.
Additionally, specify 'block_storage.hybrid_cache.storage_pools.name' or 'block_storage.hybrid_cache.storage_pools.uuid' to the storage pool.
On the first storage pool, 'block_storage.hybrid_cache.raid_type' can be specified for the raidtype of the hybrid cache.
The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/aggregates

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-
4a9f-8f01-712f626c983c" -H "accept: application/json" -d
"{\"block_storage\": {\"hybrid_cache\": {\"raid_type\": \"raid_dp\",
\"storage_pools\": [{ \"allocation_units_count\": 2, \"storage_pool\": {
\"name\": \"sp1\"}}]}}}"

# The response:
{
"job": {
  "uuid": "c103d15e-730b-11e8-a57f-005056b465d6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c103d15e-730b-11e8-a57f-005056b465d6"
    }
  }
}
}
```

Step 2: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/19425837-f2fa-4a9f-
8f01-712f626c983c?fields=block_storage.hybrid_cache" -H "accept:
application/json"

# The response:
{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "test1",
"hybrid_cache": {
    "enabled": true,
    "disk_count": 3,
    "raid_size": 24,
    "raid_type": "raid_dp",
    "size": 880279552,
    "used": 73728,
    "storage_pools": [
        {
            "allocation_units_count": 2,
            "storage_pool": {
                "name": "sp1",
                "uuid": "eeef0b24-846b-11ec-8fcb-005056bb12c7"
            }
        }
    ]
}
}
```

Adding physical SSD cache capacity to an aggregate

The following example shows how to add physical SSD cache capacity to an aggregate.
Step 1: Specify the number of disks to be added to cache in 'block_storage.hybrid_cache.disk_count'.
'block_storage.hybrid_cache.raid_type' can be specified for the RAID type of the hybrid cache.
'block_storage.hybrid_cache.raid_size' can be specified for the RAID size of the hybrid cache.
The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/aggregates

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/caa8a9f1-0219-
4eaf-bcad-e29c05042fe1" -H "accept: application/json" -d
'{"block_storage.hybrid_cache.disk_count":3,"block_storage.hybrid_cache.ra
id_type":"raid4"}'

# The response:
{
"job": {
  "uuid": "c103d15e-730b-11e8-a57f-005056b465d6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c103d15e-730b-11e8-a57f-005056b465d6"
    }
  }
}
}
```

Step 2: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/caa8a9f1-0219-4eaf-
bcad-e29c05042fe1?fields=block_storage.hybrid_cache" -H "accept:
application/json"

# The response:
{
"uuid": "caa8a9f1-0219-4eaf-bcad-e29c05042fe1",
"name": "test1",
"hybrid_cache": {
    "enabled": true,
    "disk_count": 3,
    "raid_size": 24,
    "raid_type": "raid4",
    "size": 880279552,
    "used": 73728
}
}
```

Simulated addition of physical SSD cache capacity to an aggregate

The following example shows the response for a simulated addition of physical SSD cache capacity to an aggregate based on the values of the 'block_storage.hybrid_cache.disk_count', 'block_storage.hybrid_cache.raid_type' and 'block_storage.hybrid_cache.raid_size' attributes passed in.
The query does not modify the existing aggregate but returns how the aggregate will look after the expansion along with any associated warnings.
Simulated addition of physical SSD cache capacity to an aggregate will be blocked while one or more nodes in the cluster are simulating or implementing automatic aggregate creation.
This will be reflected in the following attributes:

- block_storage.hybrid_cache.size - Total usable cache space in bytes, not including WAFL reserve and aggregate snapshot reserve.
- block_storage.hybrid_cache.disk_count - Number of disks that can be added to the aggregate's cache tier.

```
# The API:
/api/storage/aggregates/{uuid}?simulate=true

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/7eb630d1-0e55-
4cb6-8d90-957d6f4db54e?simulate=true" -H "accept: application/json" -d
'{"block_storage.hybrid_cache.disk_count":6,"block_storage.hybrid_cache.ra
id_type":"raid4","block_storage.hybrid_cache.raid_size":3}'

# The response:
{
 "warnings": [
   {
     "name": "test",
     "warning": {
       "code": 18316,
       "message": "Operation will lead to creation of new raid group"
     }
   }
 ],
 "num_records": 1,
 "records": [
   {
     "uuid": "7eb630d1-0e55-4cb6-8d90-957d6f4db54e",
     "name": "test",
     "node": {
       "uuid": "30d69eb5-f046-11ec-9bba-005056bba492",
       "name": "node-1",
       "_links": {
         "self": {
           "href": "/api/cluster/nodes/30d69eb5-f046-11ec-9bba-
005056bba492"
```

```
          }
        }
      },
      "space": {
        "block_storage": {
          "size": 833777664
        }
      },
      "block_storage": {
        "primary": {
          "disk_count": 3,
          "disk_class": "virtual",
          "raid_type": "raid_dp",
          "disk_type": "vm_disk"
        },
        "hybrid_cache": {
          "disk_class": "solid_state",
          "disk_type": "ssd",
          "enabled": false,
          "disk_count": 6,
          "raid_type": "raid4",
          "size": 6771179520,
          "simulated_raid_groups": [
            {
              "name": "/test/plex0/rg1",
              "existing_parity_disk_count": 0,
              "existing_data_disk_count": 0,
              "added_parity_disk_count": 1,
              "added_data_disk_count": 2,
              "usable_size": 1880883200,
              "is_partition": false
            },
            {
              "name": "/test/plex0/rg2",
              "existing_parity_disk_count": 0,
              "existing_data_disk_count": 0,
              "added_parity_disk_count": 1,
              "added_data_disk_count": 2,
              "usable_size": 1880883200,
              "is_partition": false
            }
          ]
        },
        "mirror": {
          "enabled": false
        }
```

```
      },
      "_links": {
        "self": {
          "href": "/api/storage/aggregates/7eb630d1-0e55-4cb6-8d90-
957d6f4db54e"
        }
      }
    }
  ]
  }
```

The following example shows the workflow to enable software encryption on an aggregate.

Step 1: Check the current software encryption status of the aggregate.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/f3aafdc6-be35-4d93-
9590-5a402bffbe4b?fields=data_encryption.software_encryption_enabled" -H
"accept: application/json"

# The response:
{
"uuid": "f3aafdc6-be35-4d93-9590-5a402bffbe4b",
"name": "aggr5",
"data_encryption": {
  "software_encryption_enabled": false
},
}
```

Step 2: Update the aggregate with the encryption status in 'data_encryption.software_encryption_enabled'. The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/aggregates

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/aggregates/f3aafdc6-be35-
4d93-9590-5a402bffbe4b" -H "accept: application/hal+json" -d
'{"data_encryption": {"software_encryption_enabled": "true"}}'

# The response:
{
"job": {
  "uuid": "6b7ab28e-168d-11ea-8a50-0050568eca76",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6b7ab28e-168d-11ea-8a50-0050568eca76"
    }
  }
}
}
```

Step 3: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/aggregates

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/f3aafdc6-be35-4d93-
9590-5a402bffbe4b?fields=data_encryption.software_encryption_enabled" -H
"accept: application/json"

# The response:
{
"uuid": "f3aafdc6-be35-4d93-9590-5a402bffbe4b",
"name": "aggr5",
"data_encryption": {
  "software_encryption_enabled": true
},
}
```

Delete an aggregate specified by the UUID

DELETE `/storage/aggregates/{uuid}`

Introduced In: 9.6

Deletes the aggregate specified by the UUID. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Aggregate UUID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
460770	The aggregate delete job failed to delete the aggregate.
460777	Failed to get information on the delete job.
786435	Internal Error. Failed to create a communication handle.
786451	Failed to delete specified aggregate.
786468	VLDB is offline.
786472	Node that hosts the aggregate is offline.
786497	Cannot delete an aggregate that has volumes.
786771	Aggregate does not exist.
786867	Specified aggregate resides on the remote cluster.

Error Code	Description
786897	Specified aggregate cannot be deleted as it is a switched-over root aggregate.
19726544	DELETE on the aggregate endpoint is not supported on this version of ONTAP.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an aggregate specified by the UUID

GET `/storage/aggregates/{uuid}`

Introduced In: 9.6

Retrieves the aggregate specified by the UUID. The recommend query cannot be used for this operation.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `metric.*`
- `space.block_storage.inactive_user_data`
- `space.block_storage.inactive_user_data_percent`
- `space.footprint`
- `is_spare_low`
- `statistics.*`

Related ONTAP commands

- `storage aggregate show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Aggregate UUID
show_spares	boolean	query	False	If set to 'true', the spares object is returned instead of records to show the spare groups in the cluster that are compatible with the aggregate. The default setting is 'false'. • Introduced in: 9.12

Name	Type	In	Required	Description
flash_pool_eligible	boolean	query	False	If set to 'true' along with show_spares, the spares object is restricted to return spare groups that are compatible with flash pool creation or addition for the specified aggregate. The default setting is 'false'. • Introduced in: 9.12
auto_provision_policy	string	query	False	If set to expand, a query is run on the system for the recommended optimal expansion layout of the aggregate. • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
cloud_storage	cloud_storage	Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
dr_home_node	dr_home_node	Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
metric	metric	The most recent sample of I/O metrics for the aggregate.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snaplock_type	string	SnapLock type.
snapshot	snapshot	

Name	Type	Description
space	space	
state	string	Operational state of the aggregate.
statistics	statistics	The real time I/O statistics for the aggregate.
uuid	string	Aggregate UUID.
volume-count	integer	Number of volumes in the aggregate.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "block_storage": {
    "hybrid_cache": {
      "disk_count": 6,
      "disk_type": "string",
      "raid_size": 24,
      "raid_type": "string",
      "simulated_raid_groups": [
        {
          "name": "string"
        }
      ],
      "size": 1612709888,
      "storage_pools": [
        {
          "storage_pool": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "storage_pool_1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "used": 26501122
    },
    "mirror": {
      "enabled": "",
      "state": "string"
    },
    "plexes": [
      {
        "_links": {
```

```
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "plex0"
      }
    ],
    "primary": {
      "checksum_style": "string",
      "disk_class": "performance",
      "disk_count": 8,
      "disk_type": "string",
      "raid_size": 16,
      "raid_type": "string",
      "simulated_raid_groups": [
        {
          "name": "string",
          "raid_type": "string"
        }
      ]
    },
    "storage_type": "string"
  },
  "cloud_storage": {
    "stores": [
      {
        "cloud_store": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "store1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "used": 0
      }
    ]
  },
  "create_time": "2018-01-01 11:00:00 -0500",
  "dr_home_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "home_node": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "inactive_data_reporting": {
    "start_time": "2019-12-12 11:00:00 -0500"
  },
  "inode_attributes": {
    "file_private_capacity": 31136,
    "file_public_capacity": 31136,
    "files_private_used": 502,
    "files_total": 31136,
    "files_used": 97,
    "max_files_available": 31136,
    "max_files_possible": 2844525,
    "max_files_used": 97,
    "used_percent": 5,
    "version": 4
  },
  "is_spare_low": "",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
```

```
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "name": "node1_aggr_1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "snaplock_type": "string",
    "snapshot": {
      "files_total": 10,
      "files_used": 3,
      "max_files_available": 5,
      "max_files_used": 50
    },
    "space": {
      "block_storage": {
        "aggregate_metadata": 2655,
        "aggregate_metadata_percent": 8,
        "available": 10156560384,
        "data_compacted_count": 1990000,
        "data_compaction_space_saved": 1996000,
        "data_compaction_space_saved_percent": 27,
        "full_threshold_percent": 0,
        "inactive_user_data": 304448,
        "inactive_user_data_percent": 0,
        "physical_used": 2461696,
        "physical_used_percent": 50,
        "size": 10156769280,
        "used": 2088960,
        "used_including_snapshot_reserve": 674685,
        "used_including_snapshot_reserve_percent": 35,
        "used_percent": 50,
        "volume_deduplication_shared_count": 1990000,
        "volume_deduplication_space_saved": 1996000,
        "volume_deduplication_space_saved_percent": 27,
        "volume_footprints_percent": 14
      },
      "cloud_storage": {
        "used": 402743264
      },
      "efficiency": {
```

```
      "logical_used": 0,
      "ratio": 0,
      "savings": 0,
      "wise_tsse_min_used_capacity_pct": 0
    },
    "efficiency_without_snapshots": {
      "logical_used": 0,
      "ratio": 0,
      "savings": 0
    },
    "efficiency_without_snapshots_flexclones": {
      "logical_used": 0,
      "ratio": 0,
      "savings": 0
    },
    "footprint": 608896,
    "snapshot": {
      "available": 2000,
      "reserve_percent": 20,
      "total": 5000,
      "used": 3000,
      "used_percent": 45
    }
  },
  "state": "string",
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "string",
  "volume-count": 0
```

```
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
787092	The target field cannot be specified for this operation.
7209049	Cannot perform the operation because the aggregate is currently expanding.
8586225	Unexpected error encountered when retrieving metrics and statistics for this aggregate.
19726382	Another provisioning operation is in progress on this cluster. Wait a few minutes, and try the operation again.
19726390	Unable to provide a recommendation to expand the aggregate.
19726391	Too many unassigned disks visible to the node that owns this aggregate.
19726392	Layout of this aggregate is not a supported configuration.
19726393	Failed to expand the aggregate. Aggregate expansion is not supported on this system.
19726394	Automatic aggregate expansion is not supported on systems with multiple data aggregates.
19726395	Automatic aggregate expansion is not supported when MetroCluster is not configured
19726396	Automatic aggregate expansion is not supported when the DR group is not in a normal state
19726397	Aggregates must contain disks with identical disk-types and disk-sizes.
19726402	Internal error. Unable to determine the MetroCluster configuration state.
19726538	Cannot perform the operation because the aggregate is not in a healthy state.
19726541	Cannot perform the operation because the specified aggregate is a root aggregate.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
usable_size	integer	Usable size of each disk, in bytes.

storage_pool_reference

Shared Storage Pool

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pools

Name	Type	Description
allocation_units_count	integer	Allocation count of storage pool.
storage_pool	storage_pool_reference	Shared Storage Pool

hybrid_cache

Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.

Name	Type	Description
disk_count	integer	Number of disks used in the cache tier of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
disk_type	string	Type of disk being used by the aggregate's cache tier.
enabled	boolean	Specifies whether the aggregate uses HDDs with SSDs as a cache.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type for SSD cache of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
simulated_raid_groups	array[simulated_raid_groups]	
size	integer	Total usable space in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.
storage_pools	array[storage_pools]	List of storage pool properties and allocation_units_count for aggregate.
used	integer	Space used in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.

mirror

Name	Type	Description
enabled	boolean	Aggregate is SyncMirror protected
state	string	

plex_reference

Plex

Name	Type	Description
_links	_links	
name	string	

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
data_disk_count	integer	Number of data disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
parity_disk_count	integer	Number of parity disks in RAID group.
raid_type	string	RAID type of the aggregate.
usable_size	integer	Usable size of each disk, in bytes.

primary

Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.

Name	Type	Description
checksum_style	string	The checksum style used by the aggregate.
disk_class	string	The class of disks being used by the aggregate.
disk_count	integer	Number of disks used in the aggregate. This includes parity disks, but excludes disks in the hybrid cache.
disk_type	string	The type of disk being used by the aggregate.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type of the aggregate.
simulated_raid_groups	array[simulated_raid_groups]	

block_storage

Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
hybrid_cache	hybrid_cache	Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.
mirror	mirror	
plexes	array[plex_reference]	Plex reference for each plex in the aggregate.
primary	primary	Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.
storage_type	string	Type of aggregate.

Name	Type	Description
uses_partitions	boolean	If true, aggregate is using shared disks.

cloud_store

Cloud store

Name	Type	Description
_links	_links	
name	string	
uuid	string	

cloud_storage_tier

Name	Type	Description
cloud_store	cloud_store	Cloud store
used	integer	Capacity used in bytes in the cloud store by this aggregate. This is a cached value calculated every 5 minutes.

cloud_storage

Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.

Name	Type	Description
attach_eligible	boolean	Specifies whether the aggregate is eligible for a cloud store to be attached.
migrate_threshold	integer	Specifies the minimum percentage of performance tier free space that must exist in order for migration of data from the capacity tier to performance tier to be allowed. Only valid for PATCH operations.
stores	array[cloud_storage_tier]	Configuration information for each cloud storage portion of the aggregate.

Name	Type	Description
tiering_fullness_threshold	integer	The percentage of space in the performance tier that must be used before data is tiered out to the cloud store. Only valid for PATCH operations.

data_encryption

Name	Type	Description
drive_protection_enabled	boolean	Specifies whether the aggregate uses self-encrypting drives with data protection enabled.
software_encryption_enabled	boolean	Specifies whether NetApp aggregate encryption is enabled. All data in the aggregate is encrypted.

dr_home_node

Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.

Name	Type	Description
name	string	
uuid	string	

home_node

Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

inactive_data_reporting

Name	Type	Description
enabled	boolean	Specifies whether or not inactive data reporting is enabled on the aggregate.

Name	Type	Description
start_time	string	Timestamp at which inactive data reporting was enabled on the aggregate.

inode_attributes

Name	Type	Description
file_private_capacity	integer	Number of files that can currently be stored on disk for system metadata files. This number will dynamically increase as more system files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
file_public_capacity	integer	Number of files that can currently be stored on disk for user-visible files. This number will dynamically increase as more user-visible files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

Name	Type	Description
files_private_used	integer	Number of system metadata files used. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_total	integer	Maximum number of user-visible files that this referenced file system can currently hold. If the referenced file system is restricted or offline, a value of 0 is returned.
files_used	integer	Number of user-visible files used in the referenced file system. If the referenced file system is restricted or offline, a value of 0 is returned.
max_files_available	integer	The count of the maximum number of user-visible files currently allowable on the referenced file system.
max_files_possible	integer	The largest value to which the maxfiles-available parameter can be increased by reconfiguration, on the referenced file system.
max_files_used	integer	The number of user-visible files currently in use on the referenced file system.
used_percent	integer	The percentage of disk space currently in use based on user-visible file count on the referenced file system.

Name	Type	Description
version	integer	The inofile-version of the aggregate. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the aggregate.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Node where the aggregate currently resides.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

snapshot

Name	Type	Description
files_total	integer	Total files allowed in snapshots
files_used	integer	Total files created in snapshots
max_files_available	integer	Maximum files available for snapshots
max_files_used	integer	Files in use by snapshots

block_storage

Name	Type	Description
aggregate_metadata	integer	Space used by different metafiles and internal operations inside the aggregate, in bytes.
aggregate_metadata_percent	integer	Aggregate metadata as a percentage.
available	integer	Space available in bytes.
data_compacted_count	integer	Amount of compacted data in bytes.
data_compaction_space_saved	integer	Space saved in bytes by compacting the data.
data_compaction_space_saved_percent	integer	Percentage saved by compacting the data.
full_threshold_percent	integer	The aggregate used percentage at which 'monitor.volume.full' EMS is generated.

Name	Type	Description
inactive_user_data	integer	The size that is physically used in the block storage and has a cold temperature, in bytes. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data or **.
inactive_user_data_percent	integer	The percentage of inactive user data in the block storage. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data_percent or **.
physical_used	integer	Total physical used size of an aggregate in bytes.
physical_used_percent	integer	Physical used percentage.
size	integer	Total usable space in bytes, not including WAFL reserve and aggregate snapshot reserve.
used	integer	Space used or reserved in bytes. Includes volume guarantees and aggregate metadata.

Name	Type	Description
used_including_snapshot_reserve	integer	Total used including the snapshot reserve, in bytes.
used_including_snapshot_reserve_percent	integer	Total used including the Snapshot reserve as a percentage.
used_percent	integer	Aggregate used percentage.
volume_deduplication_shared_count	integer	Amount of shared bytes counted by storage efficiency.
volume_deduplication_space_saved	integer	Amount of space saved in bytes by storage efficiency.
volume_deduplication_space_saved_percent	integer	Percentage of space saved by storage efficiency.
volume_footprints_percent	integer	A summation of volume footprints inside the aggregate, as a percentage. A volume's footprint is the amount of space being used for the volume in the aggregate.

cloud_storage

Name	Type	Description
used	integer	Used space in bytes in the cloud store. Only applicable for aggregates with a cloud store tier.

efficiency

Storage efficiency.

Name	Type	Description
auto_adaptive_compression_savings	boolean	Indicates whether or not aggregate has auto adaptive compression savings.
cross_volume_background_dedupe	boolean	Indicates whether or not cross volume background deduplication is enabled.

Name	Type	Description
cross_volume_dedupe_savings	boolean	Indicates whether or not aggregate has cross volume deduplication savings.
cross_volume_inline_dedupe	boolean	Indicates whether or not cross volume inline deduplication is enabled.
enable_workload_informed_tsse	boolean	Indicates whether Workload Informed TSSE is enabled on the system.
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)
wise_tsse_min_used_capacity_pct	integer	Minimum amount of used data in aggregate required to trigger cold compression on TSSE volumes.

efficiency_without_snapshots

Storage efficiency that does not include the savings provided by snapshots.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots_flexclones

Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
logical_used	integer	Logical used

Name	Type	Description
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

snapshot

Name	Type	Description
available	integer	Available space for snapshots in bytes
reserve_percent	integer	Percentage of space reserved for snapshots
total	integer	Total space for snapshots in bytes
used	integer	Space used by snapshots in bytes
used_percent	integer	Percentage of disk space used by snapshots

space

Name	Type	Description
block_storage	block_storage	
cloud_storage	cloud_storage	
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
footprint	integer	A summation of volume footprints (including volume guarantees), in bytes. This includes all of the volume footprints in the block_storage tier and the cloud_storage tier. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
snapshot	snapshot	

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the aggregate.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an aggregate specified by the UUID

PATCH `/storage/aggregates/{uuid}`

Introduced In: 9.6

Updates the aggregate specified by the UUID with the properties in the body. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage aggregate add-disks`
- `storage aggregate mirror`
- `storage aggregate modify`
- `storage aggregate relocation start`
- `storage aggregate rename`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Aggregate UUID

Name	Type	In	Required	Description
auto_provision_policy	string	query	False	If set to expand, the PATCH operation runs the recommended expansion of the aggregate. • Introduced in: 9.8
simulate	boolean	query	False	If set to true, the PATCH operation runs a simulated aggregate expansion with the provided input disk count and returns the proposed size of the new aggregate along with any associated warnings. • Introduced in: 9.8
disk_size	integer	query	False	If set, PATCH only selects disks of the specified size.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
cloud_storage	cloud_storage	Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snapshot	snapshot	
space	space	
state	string	Operational state of the aggregate.
uuid	string	Aggregate UUID.
volume-count	integer	Number of volumes in the aggregate.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "block_storage": {
    "hybrid_cache": {
      "disk_count": 6,
      "disk_type": "string",
      "raid_size": 24,
      "raid_type": "string",
      "simulated_raid_groups": [
        {
          "name": "string"
        }
      ],
      "size": 1612709888,
      "storage_pools": [
        {
          "storage_pool": {
            "name": "storage_pool_1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "used": 26501122
    },
    "mirror": {
      "enabled": "",
      "state": "string"
    },
    "plexes": [
      {
        "name": "plex0"
      }
    ],
    "primary": {
      "disk_count": 8,
      "disk_type": "string",
      "raid_size": 16,
      "raid_type": "string",
      "simulated_raid_groups": [
        {
          "name": "string",
```

```
          "raid_type": "string"
        }
      ]
    },
    "storage_type": "string"
  },
  "cloud_storage": {
    "stores": [
      {
        "cloud_store": {
          "name": "store1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "used": 0
      }
    ]
  },
  "create_time": "2018-01-01 11:00:00 -0500",
  "home_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "inactive_data_reporting": {
    "start_time": "2019-12-12 11:00:00 -0500"
  },
  "inode_attributes": {
    "file_private_capacity": 31136,
    "file_public_capacity": 31136,
    "files_private_used": 502,
    "files_total": 31136,
    "files_used": 97,
    "max_files_available": 31136,
    "max_files_possible": 2844525,
    "max_files_used": 97,
    "used_percent": 5,
    "version": 4
  },
  "is_spare_low": "",
  "name": "node1_aggr_1",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "snapshot": {
    "files_total": 10,
    "files_used": 3,
```

```
      "max_files_available": 5,
      "max_files_used": 50
    },
    "space": {
      "block_storage": {
        "aggregate_metadata": 2655,
        "aggregate_metadata_percent": 8,
        "available": 10156560384,
        "data_compacted_count": 1990000,
        "data_compaction_space_saved": 1996000,
        "data_compaction_space_saved_percent": 27,
        "full_threshold_percent": 0,
        "inactive_user_data": 304448,
        "inactive_user_data_percent": 0,
        "physical_used": 2461696,
        "physical_used_percent": 50,
        "size": 10156769280,
        "used": 2088960,
        "used_including_snapshot_reserve": 674685,
        "used_including_snapshot_reserve_percent": 35,
        "used_percent": 50,
        "volume_deduplication_shared_count": 1990000,
        "volume_deduplication_space_saved": 1996000,
        "volume_deduplication_space_saved_percent": 27,
        "volume_footprints_percent": 14
      },
      "cloud_storage": {
        "used": 402743264
      },
      "efficiency": {
        "logical_used": 0,
        "ratio": 0,
        "savings": 0,
        "wise_tsse_min_used_capacity_pct": 0
      },
      "efficiency_without_snapshots": {
        "logical_used": 0,
        "ratio": 0,
        "savings": 0
      },
      "efficiency_without_snapshots_flexclones": {
        "logical_used": 0,
        "ratio": 0,
        "savings": 0
      },
      "footprint": 608896,
```

```
    "snapshot": {
      "available": 2000,
      "reserve_percent": 20,
      "total": 5000,
      "used": 3000,
      "used_percent": 45
    }
  },
  "state": "string",
  "uuid": "string",
  "volume-count": 0
}
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	
num_records	integer	Number of records
records	array[aggregate]	
warnings	array[aggregate_warning]	List of validation warnings and remediation advice for the aggregate simulate behavior.

Example response


```
{
  "job": {
    "uuid": "string"
  },
  "num_records": 1,
  "records": [
    {
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "block_storage": {
        "hybrid_cache": {
          "disk_count": 6,
          "disk_type": "string",
          "raid_size": 24,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string"
            }
          ],
          "size": 1612709888,
          "storage_pools": [
            {
              "storage_pool": {
                "name": "storage_pool_1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            }
          ],
          "used": 26501122
        },
        "mirror": {
          "enabled": "",
          "state": "string"
        },
        "plexes": [
          {
            "name": "plex0"
          }
        ],
        "primary": {
          "disk_count": 8,
```

```
          "disk_type": "string",
          "raid_size": 16,
          "raid_type": "string",
          "simulated_raid_groups": [
            {
              "name": "string",
              "raid_type": "string"
            }
          ]
        },
        "storage_type": "string"
      },
      "cloud_storage": {
        "stores": [
          {
            "cloud_store": {
              "name": "store1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "used": 0
          }
        ]
      },
      "create_time": "2018-01-01 11:00:00 -0500",
      "home_node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "inactive_data_reporting": {
        "start_time": "2019-12-12 11:00:00 -0500"
      },
      "inode_attributes": {
        "file_private_capacity": 31136,
        "file_public_capacity": 31136,
        "files_private_used": 502,
        "files_total": 31136,
        "files_used": 97,
        "max_files_available": 31136,
        "max_files_possible": 2844525,
        "max_files_used": 97,
        "used_percent": 5,
        "version": 4
      },
      "is_spare_low": "",
      "name": "node1_aggr_1",
      "node": {
```

```
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snapshot": {
        "files_total": 10,
        "files_used": 3,
        "max_files_available": 5,
        "max_files_used": 50
      },
      "space": {
        "block_storage": {
          "aggregate_metadata": 2655,
          "aggregate_metadata_percent": 8,
          "available": 10156560384,
          "data_compacted_count": 1990000,
          "data_compaction_space_saved": 1996000,
          "data_compaction_space_saved_percent": 27,
          "full_threshold_percent": 0,
          "inactive_user_data": 304448,
          "inactive_user_data_percent": 0,
          "physical_used": 2461696,
          "physical_used_percent": 50,
          "size": 10156769280,
          "used": 2088960,
          "used_including_snapshot_reserve": 674685,
          "used_including_snapshot_reserve_percent": 35,
          "used_percent": 50,
          "volume_deduplication_shared_count": 1990000,
          "volume_deduplication_space_saved": 1996000,
          "volume_deduplication_space_saved_percent": 27,
          "volume_footprints_percent": 14
        },
        "cloud_storage": {
          "used": 402743264
        },
        "efficiency": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0,
          "wise_tsse_min_used_capacity_pct": 0
        },
        "efficiency_without_snapshots": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
```

```
        "efficiency_without_snapshots_flexclones": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "footprint": 608896,
        "snapshot": {
          "available": 2000,
          "reserve_percent": 20,
          "total": 5000,
          "used": 3000,
          "used_percent": 45
        }
      },
      "state": "string",
      "uuid": "string",
      "volume-count": 0
    }
  ],
  "warnings": [
    {
      "action": {
        "arguments": [
          "string"
        ],
        "message": "string"
      },
      "name": "string",
      "warning": {
        "arguments": [
          "string"
        ],
        "message": "string"
      }
    }
  ]
}
```


Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262247	The value is invalid for the field.
460777	Failed to get information on the job.
786434	Cannot connect to node where the aggregate resides.
786435	Internal Error. Failed to create a communication handle.
786439	An aggregate already uses the specified name.
786447	Failed to modify the aggregate.
786456	Failed to add disks to the aggregate.
786458	Failed to rename aggregate.
786465	Failed to take aggregate offline because of the reason outlined in the message.
786467	Failed to take aggregate online because of the reason outlined in the message.
786468	VLDB is offline.
786472	Node that hosts the aggregate is offline.
786479	Cannot find node ID for the node.
786491	Not enough spares on the node.
786730	Internal Error
786771	Aggregate does not exist.
786787	Aggregate is not online.
786808	Aggregate mirror failed.
786867	Specified aggregate resides on the remote cluster.
786911	Not every node in the cluster has the Data ONTAP version required for the feature.
786923	This operation is not allowed during the pre-commit phase of a 7-mode to clustered Data ONTAP transition.
786924	Internal error for an aggregate that is in the pre-commit phase of a 7-mode to clustered Data ONTAP transition.
786955	Modifying raidtype to raid_tec requires a minimum of six disks in the RAID Group.

Error Code	Description
786956	Modifying raidtype to raid_dp requires a minimum of four disks in the RAID Group.
786965	Spare Selection in userspace failed.
787046	Mirroring of a FabricPool is not allowed.
787092	The target field cannot be specified for this operation.
787144	Aggregate is not a FabricPool.
787156	Modifying the attributes of mirror object store is not allowed.
787169	Only one field can be modified per operation.
787170	Failed to patch the "block_storage.primary.disk_count" because the disk count specified is smaller than existing disk count.
787172	This query is only allowed during the modification of the specified field.
787178	Unmirroring an aggregate with a PATCH operation is not supported.
787187	Internal error. Failed to check if the aggregate is a FabricPool.
787266	Invalid aggregate state. This state is not supported for a PATCH operation.
787273	Allocation unit count is not valid.
787274	Raidtype is not valid.
787275	Patch request with multiple records is not valid.
787276	Storage pool name and uuid do not match.
787277	Storage pool name and uuid are empty.
787278	Incorrect storage pool name specified.
787279	Incorrect storage pool uuid specified.
787280	Allocation unit count specified is smaller than the existing allocation unit count.
787281	Cannot modify RAID type of aggregate hybrid cache tier.
787282	RAID group must be specified on a disk addition to an aggregate with mixed RAID types.
787283	RAID group must be specified on a disk addition to a Flash Pool aggregate.
787284	The specified RAID group uses capacity from one or more storage pools.

Error Code	Description
787287	Cannot add physical SSD cache because aggregate uses cache capacity from a storage pool.
787288	Cannot add storage pool units because aggregate uses physical SSD cache.
787289	Incorrect raid_group specified during first time addition of physical SSD cache to an aggregate.
787291	Cannot specify RAID group which is located on the aggregate primary tier.
787293	Cannot specify RAID group which is located on the aggregate cache tier.
787294	This query is only allowed during the modification of the specific fields.
787295	The storage pool allocation units count is required.
1258699	Cannot use all the disks specified for the requested operation.
1263500	Operation will lead to creation of new raid group.
1263501	Operation will exceed half of the maximum volume sizes allowed on the node.
1263502	One spare data partition from at least one of the chosen root-data1-data2 disks will not be used.
1263503	Operation will lead to downsizing of one or more disks.
1263504	Operation will lead to a spares low condition.
1263598	One or more selected disks will be partitioned.
1263624	Operation will lead to a no sparecore condition.
2425736	No matching node found for the UUID provided.
7208962	Aggregate in an inconsistent state.
7208993	Failed to offline as the volume is being used.
7209033	CIFS open files prevent operation.
7209049	Cannot perform the operation because the aggregate is currently expanding.
7209075	Cannot perform the operation because the volume size limit for this system type would be exceeded.
7209090	Inconsistent state.
7209183	Volume is a partial volume.
7209229	This version of ONTAP does not recognize the filesystem. It is probably from a later version of the software and is being left offline.

Error Code	Description
7209246	The specified operation could not be completed as the volume is currently busy.
7209247	The volume was not found.
7209263	Container has failed.
7209271	wafliron is currently active.
7209275	Container was created in an unclustered ONTAP deployment.
7209463	Nvfile replay pending.
7209966	Another online request is already in progress for aggregate. The previous online request is waiting on a response from the licensing manager.
11206666	Storage pool is not healthy.
11210659	Aggregate is not online.
11210662	Adding capacity from storage pool to a mirrored aggregate is not supported.
11210667	Storage pool does not have enough spare allocation units.
11210670	Cannot add capacity from storage pool to aggregate, because currently allocated capacity to the aggregate does not span across all disks belonging to the storage pool.
11210672	Cannot grow aggregate as no capacity is allocated to it from storage pool.
11210673	Mixing of physical SSDs and capacity from a storage pool is not allowed in same aggregate.
11210675	Capacity in storage pool belongs to different fault isolation domain than aggregate.
11210678	Storage pool does not have enough disks to create RAID groups of same raid type as that of already allocated cache tier.
11210679	Storage pool does not have enough disks to create RAID groups of type RAID-DP.
11210680	Storage pool does not have enough disks to create RAID groups of same raid type as that of the aggregate.
11210685	Storage pool does not have enough disks to create RAID groups of type RAID-TEC.
11210688	Capacity from storage pool cannot be added to an SSD aggregate and a Flash Pool.

Error Code	Description
13108106	Cannot run aggregate relocation because volume expand is in progress.
19726347	There are a number of unassigned disks visible to the node that owns this aggregate.
19726382	Another provisioning operation is in progress on this cluster. Wait a few minutes, and try the operation again.
19726390	Unable to automatically expand this aggregate.
19726391	Too many unassigned disks visible to the node that owns this aggregate.
19726392	Layout of this aggregate is not a supported configuration.
19726393	Failed to expand the aggregate. Aggregate expansion is not supported on this system.
19726394	Automatic aggregate expansion is not supported on systems with multiple data aggregates.
19726395	Automatic aggregate expansion is not supported when MetroCluster is not configured.
19726396	Automatic aggregate expansion is not supported when the DR group is not in a normal state.
19726397	Aggregates must contain disks with identical disk-types and disk-sizes.
19726402	Internal error. Unable to determine the MetroCluster configuration state.
19726538	Cannot perform the operation because the aggregate is not in a healthy state.
19726541	Cannot perform the operation because the specified aggregate is a root aggregate.
19726544	PATCH on the aggregate endpoint is not supported on this version of ONTAP.
26542083	Destination node is at higher Data ONTAP version than source node.
26542084	Source node is at higher Data ONTAP version than destination node.
26542097	Unable to get D-blade ID of destination.
26542101	Unable to contact the source node.
26542102	Unable to contact the destination node.
26542120	An SVM migrate operation is in progress. When the migrate operation completes, try the operation again.

Error Code	Description
26542121	A MetroCluster disaster recovery operation is in progress. When the recovery operation completes, try the operation again.
196608334	Failed to modify the aggregate because it contains NAE volumes.
196608335	Failed to modify the aggregate because it contains non-encrypted volumes.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
usable_size	integer	Usable size of each disk, in bytes.

storage_pool_reference

Shared Storage Pool

Name	Type	Description
name	string	
uuid	string	

storage_pools

Name	Type	Description
allocation_units_count	integer	Allocation count of storage pool.

Name	Type	Description
storage_pool	storage_pool_reference	Shared Storage Pool

hybrid_cache

Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.

Name	Type	Description
disk_count	integer	Number of disks used in the cache tier of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
disk_type	string	Type of disk being used by the aggregate's cache tier.
enabled	boolean	Specifies whether the aggregate uses HDDs with SSDs as a cache.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type for SSD cache of the aggregate. Only provided when hybrid_cache.enabled is 'true'.
simulated_raid_groups	array[simulated_raid_groups]	
size	integer	Total usable space in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.
storage_pools	array[storage_pools]	List of storage pool properties and allocation_units_count for aggregate.
used	integer	Space used in bytes of SSD cache. Only provided when hybrid_cache.enabled is 'true'.

mirror

Name	Type	Description
enabled	boolean	Aggregate is SyncMirror protected
state	string	

plex_reference

Plex

Name	Type	Description
name	string	

simulated_raid_groups

Name	Type	Description
added_data_disk_count	integer	Number of added data disks in RAID group.
added_parity_disk_count	integer	Number of added parity disks in RAID group.
data_disk_count	integer	Number of data disks in RAID group.
existing_data_disk_count	integer	Number of existing data disks in the RAID group.
existing_parity_disk_count	integer	Number of existing parity disks in the RAID group.
is_partition	boolean	Indicates whether the disk is partitioned (true) or whole (false).
name	string	Name of the raid group.
parity_disk_count	integer	Number of parity disks in RAID group.
raid_type	string	RAID type of the aggregate.
usable_size	integer	Usable size of each disk, in bytes.

primary

Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache

details.

Name	Type	Description
disk_count	integer	Number of disks used in the aggregate. This includes parity disks, but excludes disks in the hybrid cache.
disk_type	string	The type of disk being used by the aggregate.
raid_size	integer	Option to specify the maximum number of disks that can be included in a RAID group.
raid_type	string	RAID type of the aggregate.
simulated_raid_groups	array[simulated_raid_groups]	

block_storage

Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.

Name	Type	Description
hybrid_cache	hybrid_cache	Contains the configuration for the hybrid cache. The hybrid cache is made up of either whole SSDs or storage pool SSDs.
mirror	mirror	
plexes	array[plex_reference]	Plex reference for each plex in the aggregate.
primary	primary	Configuration information for the primary storage portion of the aggregate. This excludes the hybrid cache details.
storage_type	string	Type of aggregate.
uses_partitions	boolean	If true, aggregate is using shared disks.

cloud_store

Cloud store

Name	Type	Description
name	string	
uuid	string	

cloud_storage_tier

Name	Type	Description
cloud_store	cloud_store	Cloud store
used	integer	Capacity used in bytes in the cloud store by this aggregate. This is a cached value calculated every 5 minutes.

cloud_storage

Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.

Name	Type	Description
attach_eligible	boolean	Specifies whether the aggregate is eligible for a cloud store to be attached.
migrate_threshold	integer	Specifies the minimum percentage of performance tier free space that must exist in order for migration of data from the capacity tier to performance tier to be allowed. Only valid for PATCH operations.
stores	array[cloud_storage_tier]	Configuration information for each cloud storage portion of the aggregate.
tiering_fullness_threshold	integer	The percentage of space in the performance tier that must be used before data is tiered out to the cloud store. Only valid for PATCH operations.

data_encryption

Name	Type	Description
drive_protection_enabled	boolean	Specifies whether the aggregate uses self-encrypting drives with data protection enabled.
software_encryption_enabled	boolean	Specifies whether NetApp aggregate encryption is enabled. All data in the aggregate is encrypted.

dr_home_node

Node where the aggregate resides after disaster recovery. The value for this field might differ from the 'node' field during switchover.

Name	Type	Description
name	string	
uuid	string	

home_node

Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.

Name	Type	Description
name	string	
uuid	string	

inactive_data_reporting

Name	Type	Description
enabled	boolean	Specifies whether or not inactive data reporting is enabled on the aggregate.
start_time	string	Timestamp at which inactive data reporting was enabled on the aggregate.

inode_attributes

Name	Type	Description
file_private_capacity	integer	Number of files that can currently be stored on disk for system metadata files. This number will dynamically increase as more system files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
file_public_capacity	integer	Number of files that can currently be stored on disk for user-visible files. This number will dynamically increase as more user-visible files are created. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_private_used	integer	Number of system metadata files used. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
files_total	integer	Maximum number of user-visible files that this referenced file system can currently hold. If the referenced file system is restricted or offline, a value of 0 is returned.

Name	Type	Description
files_used	integer	Number of user-visible files used in the referenced file system. If the referenced file system is restricted or offline, a value of 0 is returned.
max_files_available	integer	The count of the maximum number of user-visible files currently allowable on the referenced file system.
max_files_possible	integer	The largest value to which the maxfiles-available parameter can be increased by reconfiguration, on the referenced file system.
max_files_used	integer	The number of user-visible files currently in use on the referenced file system.
used_percent	integer	The percentage of disk space currently in use based on user-visible file count on the referenced file system.
version	integer	The inofile-version of the aggregate. If the referenced file system is restricted or offline, a value of 0 is returned. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the aggregate.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

node

Node where the aggregate currently resides.

Name	Type	Description
name	string	
uuid	string	

snapshot

Name	Type	Description
files_total	integer	Total files allowed in snapshots
files_used	integer	Total files created in snapshots

Name	Type	Description
max_files_available	integer	Maximum files available for snapshots
max_files_used	integer	Files in use by snapshots

block_storage

Name	Type	Description
aggregate_metadata	integer	Space used by different metafiles and internal operations inside the aggregate, in bytes.
aggregate_metadata_percent	integer	Aggregate metadata as a percentage.
available	integer	Space available in bytes.
data_compacted_count	integer	Amount of compacted data in bytes.
data_compaction_space_saved	integer	Space saved in bytes by compacting the data.
data_compaction_space_saved_percent	integer	Percentage saved by compacting the data.
full_threshold_percent	integer	The aggregate used percentage at which 'monitor.volume.full' EMS is generated.

Name	Type	Description
inactive_user_data	integer	The size that is physically used in the block storage and has a cold temperature, in bytes. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data or **.
inactive_user_data_percent	integer	The percentage of inactive user data in the block storage. This property is only supported if the aggregate is either attached to a cloud store or can be attached to a cloud store. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either block_storage.inactive_user_data_percent or **.
physical_used	integer	Total physical used size of an aggregate in bytes.
physical_used_percent	integer	Physical used percentage.
size	integer	Total usable space in bytes, not including WAFL reserve and aggregate snapshot reserve.
used	integer	Space used or reserved in bytes. Includes volume guarantees and aggregate metadata.

Name	Type	Description
used_including_snapshot_reserve	integer	Total used including the snapshot reserve, in bytes.
used_including_snapshot_reserve_percent	integer	Total used including the Snapshot reserve as a percentage.
used_percent	integer	Aggregate used percentage.
volume_deduplication_shared_count	integer	Amount of shared bytes counted by storage efficiency.
volume_deduplication_space_saved	integer	Amount of space saved in bytes by storage efficiency.
volume_deduplication_space_saved_percent	integer	Percentage of space saved by storage efficiency.
volume_footprints_percent	integer	A summation of volume footprints inside the aggregate, as a percentage. A volume's footprint is the amount of space being used for the volume in the aggregate.

cloud_storage

Name	Type	Description
used	integer	Used space in bytes in the cloud store. Only applicable for aggregates with a cloud store tier.

efficiency

Storage efficiency.

Name	Type	Description
auto_adaptive_compression_savings	boolean	Indicates whether or not aggregate has auto adaptive compression savings.
cross_volume_background_dedupe	boolean	Indicates whether or not cross volume background deduplication is enabled.

Name	Type	Description
cross_volume_dedupe_savings	boolean	Indicates whether or not aggregate has cross volume deduplication savings.
cross_volume_inline_dedupe	boolean	Indicates whether or not cross volume inline deduplication is enabled.
enable_workload_informed_tsse	boolean	Indicates whether Workload Informed TSSE is enabled on the system.
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)
wise_tsse_min_used_capacity_pct	integer	Minimum amount of used data in aggregate required to trigger cold compression on TSSE volumes.

efficiency_without_snapshots

Storage efficiency that does not include the savings provided by snapshots.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots_flexclones

Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
logical_used	integer	Logical used

Name	Type	Description
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

snapshot

Name	Type	Description
available	integer	Available space for snapshots in bytes
reserve_percent	integer	Percentage of space reserved for snapshots
total	integer	Total space for snapshots in bytes
used	integer	Space used by snapshots in bytes
used_percent	integer	Percentage of disk space used by snapshots

space

Name	Type	Description
block_storage	block_storage	
cloud_storage	cloud_storage	
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and Flexclone volumes.

Name	Type	Description
footprint	integer	A summation of volume footprints (including volume guarantees), in bytes. This includes all of the volume footprints in the block_storage tier and the cloud_storage tier. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
snapshot	snapshot	

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

The real time I/O statistics for the aggregate.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

aggregate

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
block_storage	block_storage	Configuration information for the locally attached portion of the aggregate. When a cloud store is also used by this aggregate, this is referred to as the performance tier.
cloud_storage	cloud_storage	Configuration information for the cloud storage portion of the aggregate. This is referred to as the capacity tier.
create_time	string	Timestamp of aggregate creation.
data_encryption	data_encryption	
home_node	home_node	Node where the aggregate resides after giveback. The value for this field might differ from the value of the 'node' field during takeover.
inactive_data_reporting	inactive_data_reporting	
inode_attributes	inode_attributes	
is_spare_low	boolean	Specifies whether the aggregate is in a spares low condition on any of the RAID groups. This is an advanced property; there is an added computational cost to retrieving its value. The field is not populated for either a collection GET or an instance GET unless it is explicitly requested using the *fields* query parameter containing either footprint or **.
name	string	Aggregate name.
node	node	Node where the aggregate currently resides.

Name	Type	Description
sidl_enabled	boolean	Specifies whether or not SIDL is enabled on the aggregate.
snapshot	snapshot	
space	space	
state	string	Operational state of the aggregate.
uuid	string	Aggregate UUID.
volume-count	integer	Number of volumes in the aggregate.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

action

Name	Type	Description
arguments	array[string]	Arguments present in the specified action message.
code	integer	Corrective action code of the specified action.
message	string	Specifies the corrective action to be taken to resolve the issue.

warning

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	integer	Warning code of the warning encountered.

Name	Type	Description
message	string	Details of the warning encountered by the aggregate simulate query.

aggregate_warning

Name	Type	Description
action	action	
name	string	Name of the entity that returns the warning.
warning	warning	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage aggregate metrics

Storage aggregates UUID metrics endpoint overview

Overview

The Storage Aggregate Metrics API provides historical performance metrics for the specified aggregate. The collection GET operation retrieves read, write, other and total metrics for a given aggregate, in terms of IOPS, latency and throughput. The read and write categories display the I/O operations that service user reads and writes across all the hosted volumes on a given aggregate. The other category encompasses background I/O operations that implement data protection services currently running on the aggregate. IOPs are the

number of I/O operations reported per second, throughput is the amount of I/O operations measured in bytes per second and latency is the average response time for an IOP, reported in microseconds.
Without a specified time interval, the output is limited to statistics collected at 15 second intervals over the last hour.

Examples

Retrieving metrics for an aggregate

In this example, the API returns a set of records that exist for the aggregate with the given UUID for the last hour.

```
# The API:
/api/storage/aggregates/{uuid}/metrics

#The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/538bf337-1b2c-11e8-
bad0-005056b48388/metrics?max_records=4" -H "accept: application/json"

#The response:
{
"records": [
  {
    "timestamp": "2019-01-14T23:33:45Z"
  },
  {
    "timestamp": "2019-01-14T23:33:30Z"
  },
  {
    "timestamp": "2019-01-14T23:33:15Z"
  },
  {
    "timestamp": "2019-01-14T23:33:00Z"
  }
],
"num_records": 4
}
```

Retrieving metrics for an aggregate with a set timestamp

In this example, the API returns metric values for latency, IOPS, and throughput properties such as read, write and total. The status and duration
for which the metrics are requested are also returned.

```
#The API:
/api/storage/aggregates/{uuid}/metrics?timestamp={timestamp}

#The call:
curl -X GET "https://<mgmt-ip>/api/storage/aggregates/538bf337-1b2c-11e8-
bad0-005056b48388/metrics?timestamp=2019-01-1T23:33:00Z" -H "accept:
application/json"

#The response:
{
"records": [
  {
    "uuid": "538bf337-1b2c-11e8-bad0-005056b48388",
    "timestamp": "2019-01-01T23:33:00Z",
    "status": "ok",
    "duration": "PT15S",
    "throughput": {
      "read": 6826,
      "write": 205892,
      "other": 0,
      "total": 212718
    },
    "latency": {
      "read": 148,
      "write": 216,
      "other": 0,
      "total": 199
    },
    "iops": {
      "read": 1,
      "write": 5,
      "other": 0,
      "total": 6
    }
  }
]
}
```

Retrieving metrics for an aggregate for a set time interval

In this example, the API returns the requested metrics for the given time interval of 1 week. The interval value can be
1 hour, 1 day, 1 week, 1 month or 1 year. If the interval value is not set, a default value of 1 hour is used.

```
#The API:
```

```
/api/storage/aggregates/{uuid}/metrics

#The call:
  curl -X GET "https://<mgmt-ip>/api/storage/aggregates/538bf337-1b2c-
11e8-bad0-
005056b48388/metrics?return_timeout=15&fields=*&interval=1w&max_records=4"
-H "accept: application/json"

#The response:
{
"records": [
  {
     "timestamp": "2019-01-01T23:30:00Z",
     "status": "ok",
     "duration": "PT30M",
     "throughput": {
       "read": 268328,
       "write": 5556255,
       "other": 0,
       "total": 5824584
     },
     "latency": {
       "read": 156,
       "write": 430,
       "other": 0,
       "total": 318
     },
     "iops": {
       "read": 18,
       "write": 26,
       "other": 0,
       "total": 45
     }
  },
  {
     "timestamp": "2019-01-01T23:00:00Z",
     "status": "ok",
     "duration": "PT30M",
     "throughput": {
       "read": 474266,
       "write": 6121908,
       "other": 0,
       "total": 6596175
     },
     "latency": {
       "read": 154,
```

```
        "write": 448,
        "other": 0,
        "total": 262
      },
      "iops": {
        "read": 48,
        "write": 28,
        "other": 0,
        "total": 76
      }
    },
    {
      "timestamp": "2019-01-01T22:30:00Z",
      "status": "ok",
      "duration": "PT30M",
      "throughput": {
        "read": 540164,
        "write": 2411356,
        "other": 26244685,
        "total": 29196206
      },
      "latency": {
        "read": 159,
        "write": 394,
        "other": 192,
        "total": 193
      },
      "iops": {
        "read": 94,
        "write": 16,
        "other": 437,
        "total": 548
      }
    },
    {
      "timestamp": "2019-01-01T22:00:00Z",
      "status": "ok",
      "duration": "PT30M",
      "throughput": {
        "read": 2842,
        "write": 2765407,
        "other": 0,
        "total": 2768249
      },
      "latency": {
        "read": 189,
```

```
        "write": 540,
        "other": 0,
        "total": 523
      },
      "iops": {
        "read": 0,
        "write": 13,
        "other": 0,
        "total": 13
      }
    }
  ],
  "num_records": 4
  }
```


Related ONTAP commands

- `statistics aggregate show`

Retrieve historical performance metrics for an aggregate

GET `/storage/aggregates/{uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for an aggregate.

Parameters

Name	Type	In	Required	Description
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
timestamp	string	query	False	Filter by timestamp
throughput.read	integer	query	False	Filter by throughput.read

Name	Type	In	Required	Description
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
status	string	query	False	Filter by status
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
uuid	string	path	True	Unique identifier of the aggregate.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Values can be 1h, 1d, 1w, 1m, or 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8586225	Encountered unexpected error in retrieving metrics for the requested aggregate.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage bridges

Storage bridges endpoint overview

Retrieving storage bridge information

The storage bridge GET API retrieves all of the bridges in the cluster.

Examples

1) Retrieves a list of bridges from the cluster

The following example shows the response with a list of bridges from the cluster:

```
# The API:
/api/storage/bridges

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/bridges" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "wwn": "2000001086a18100",
    "name": "ATTO_2000001086a18100",
    "_links": {
      "self": {
        "href": "/api/storage/bridges/2000001086a18100"
      }
    }
  },
  {
    "wwn": "2000001086a18380",
    "name": "ATTO_2000001086a18380",
    "_links": {
      "self": {
        "href": "/api/storage/bridges/2000001086a18380"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/storage/bridges/"
  }
}
}
```

2) Retrieves a specific bridge from the cluster

The following example shows the response of the requested bridge. If there is no bridge with the requested wwn, an error is returned.

```
# The API:
/api/storage/bridges/{wwn}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/bridges/2000001086a18100" -H
"accept: application/hal+json"

# The response:
{
 "wwn": "2000001086a18100",
 "chassis_throughput_state": "ok",
 "dram_single_bit_error_count": 0,
 "firmware_version": "3.10 007A",
 "ip_address": "10.226.57.178",
 "security_enabled": false,
 "monitoring_enabled": true,
 "model": "FibreBridge 7500N",
 "state": "ok",
 "managed_by": "in_band",
 "serial_number": "FB7500N102450",
 "symbolic_name": "RTP-FCSAS02-41KK10",
 "vendor": "atto",
 "name": "ATTO_2000001086a18100",
 "last_reboot": {
 "reason": {
   "message": "Reason: \"FirmwareRestart Command\".",
   "code": "39321683"
 },
 "time": "2020-12-09T00:47:58-05:00"
 },
 "paths": [
 {
   "name": "0e",
   "node": {
     "name": "sti8080mcc-htp-005",
     "uuid": "ecc3d992-3a86-11eb-9fab-00a0985a6024",
     "_links": {
       "self": {
         "href": "/api/cluster/nodes/ecc3d992-3a86-11eb-9fab-00a0985a6024"
       }
     }
   },
   "_links": {
     "self": {
       "href": "/api/storage/ports/ecc3d992-3a86-11eb-9fab-
00a0985a6024/0e"
```

```
      }
    },
    "target_port": {
      "wwn": "2100001086a18380"
    }
  }
  ],
  "temperature_sensor": {
  "name": "Chassis Temperature Sensor",
  "minimum": 0,
  "maximum": 90,
  "reading": 54,
  "state": "ok"
  },
  "fc_ports": [
 {
  "id": 1,
  "state": "online",
  "enabled": true,
  "negotiated_data_rate": 8,
  "configured_data_rate": 8,
  "conn_mode": "ptp",
  "data_rate_capability": 16,
  "wwn": "2100001086a18100",
  "peer_wwn": "0000000000000000",
  "sfp": {
   "vendor": "FINISAR CORP.",
   "serial_number": "UW106SA",
   "part_number": "FTLF8529P3BCV",
   "data_rate_capability": 16
  }
 },
 {
  "id": 2,
  "state": "online",
  "enabled": true,
  "negotiated_data_rate": 16,
  "configured_data_rate": 16,
  "conn_mode": "ptp",
  "data_rate_capability": 16,
  "wwn": "2200001086a18100",
  "peer_wwn": "0000000000000000",
  "sfp": {
   "vendor": "FINISAR CORP.",
   "serial_number": "UW1072B",
   "part_number": "FTLF8529P3BCV",
```

```
  "data_rate_capability": 16
  }
 }
],
 "power_supply_units": [
{
 "name": "A",
 "state": "ok"
},
{
 "name": "B",
 "state": "ok"
}
 ],
 "sas_ports": [
{
 "id": 1,
  "state": "online",
  "enabled": true,
  "data_rate_capability": 12,
  "negotiated_data_rate": 6,
  "wwn": "5001086000a18100",
  "phy_1": {
    "state": "online"
  },
  "phy_2": {
    "state": "online"
  },
  "phy_3": {
    "state": "online"
  },
  "phy_4": {
    "state": "online"
  },
  "cable": {
    "vendor": "Molex Inc.",
    "serial_number": "618130935",
    "technology": "Passive Copper 5m ID:00",
    "part_number": "112-00431"
  }
 },
{
  "state": "offline",
  "enabled": false,
  "data_rate_capability": 12,
  "negotiated_data_rate": 0,
```

```
    "wwn": "5001086000a18104",
    "phy_1": {
      "state": "offline"
    },
    "phy_2": {
      "state": "offline"
    },
    "phy_3": {
      "state": "offline"
    },
    "phy_4": {
      "state": "offline"
    },
  },
{
    "state": "offline",
    "enabled": false,
    "data_rate_capability": 12,
    "negotiated_data_rate": 0,
    "wwn": "5001086000a18108",
    "phy_1": {
      "state": "offline"
    },
    "phy_2": {
      "state": "offline"
    },
    "phy_3": {
      "state": "offline"
    },
    "phy_4": {
      "state": "offline"
    },
  },
{
    "state": "offline",
    "enabled": false,
    "data_rate_capability": 12,
    "negotiated_data_rate": 0,
    "wwn": "5001086000a1810c",
    "phy_1": {
      "state": "offline"
    },
    "phy_2": {
      "state": "offline"
    },
    "phy_3": {
```

```
    "state": "offline"
  },
  "phy_4": {
    "state": "offline"
  },
}
],
"_links": {
"self": {
  "href": "/api/storage/bridges/2000001086a18100"
 }
}
}
```

Retrieve a collection of bridges

GET `/storage/bridges`

Introduced In: 9.9

Retrieves a collection of bridges.

Related ONTAP commands

- `storage bridge show`

Learn more

- DOC /storage/bridges

Parameters

Name	Type	In	Required	Description
sas_ports.id	integer	query	False	Filter by sas_ports.id
sas_ports.phy_2.state	string	query	False	Filter by sas_ports.phy_2.state
sas_ports.phy_1.state	string	query	False	Filter by sas_ports.phy_1.state
sas_ports.state	string	query	False	Filter by sas_ports.state

Name	Type	In	Required	Description
sas_ports.phy_4.state	string	query	False	Filter by sas_ports.phy_4.state
sas_ports.negotiated_data_rate	number	query	False	Filter by sas_ports.negotiated_data_rate
sas_ports.phy_3.state	string	query	False	Filter by sas_ports.phy_3.state
sas_ports.data_rate_capability	number	query	False	Filter by sas_ports.data_rate_capability
sas_ports.enabled	boolean	query	False	Filter by sas_ports.enabled
sas_ports.cable.vendor	string	query	False	Filter by sas_ports.cable.vendor
sas_ports.cable.serial_number	string	query	False	Filter by sas_ports.cable.serial_number
sas_ports.cable.part_number	string	query	False	Filter by sas_ports.cable.part_number
sas_ports.cable.technology	string	query	False	Filter by sas_ports.cable.technology
sas_ports.wwn	string	query	False	Filter by sas_ports.wwn
power_supply_units.state	string	query	False	Filter by power_supply_units.state
power_supply_units.name	string	query	False	Filter by power_supply_units.name
state	string	query	False	Filter by state

Name	Type	In	Required	Description
chassis_throughput_state	string	query	False	Filter by chassis_throughput_state
vendor	string	query	False	Filter by vendor
dram_single_bit_error_count	integer	query	False	Filter by dram_single_bit_error_count
ip_address	string	query	False	Filter by ip_address
model	string	query	False	Filter by model
wwn	string	query	False	Filter by wwn
serial_number	string	query	False	Filter by serial_number
errors.severity	string	query	False	Filter by errors.severity
errors.type	string	query	False	Filter by errors.type
errors.component.unique_id	string	query	False	Filter by errors.component.unique_id
errors.component.name	string	query	False	Filter by errors.component.name
errors.component.id	integer	query	False	Filter by errors.component.id
errors.reason.code	string	query	False	Filter by errors.reason.code
errors.reason.message	string	query	False	Filter by errors.reason.message

Name	Type	In	Required	Description
errors.reason.arguments.code	string	query	False	Filter by errors.reason.arguments.code • Introduced in: 9.10
errors.reason.arguments.message	string	query	False	Filter by errors.reason.arguments.message • Introduced in: 9.10
managed_by	string	query	False	Filter by managed_by
symbolic_name	string	query	False	Filter by symbolic_name
temperature_sensor.reading	integer	query	False	Filter by temperature_sensor.reading
temperature_sensor.name	string	query	False	Filter by temperature_sensor.name
temperature_sensor.state	string	query	False	Filter by temperature_sensor.state
temperature_sensor.maximum	integer	query	False	Filter by temperature_sensor.maximum
temperature_sensor.minimum	integer	query	False	Filter by temperature_sensor.minimum
monitoring_enabled	boolean	query	False	Filter by monitoring_enabled
paths.node.uuid	string	query	False	Filter by paths.node.uuid

Name	Type	In	Required	Description
paths.node.name	string	query	False	Filter by paths.node.name
paths.target_port.id	string	query	False	Filter by paths.target_port.id
paths.target_port.name	string	query	False	Filter by paths.target_port.name
paths.target_port.wwn	string	query	False	Filter by paths.target_port.wwn
paths.name	string	query	False	Filter by paths.name
paths.source_port.id	string	query	False	Filter by paths.source_port.id
paths.source_port.name	string	query	False	Filter by paths.source_port.name
last_reboot.reason.code	string	query	False	Filter by last_reboot.reason.code
last_reboot.reason.message	string	query	False	Filter by last_reboot.reason.message
last_reboot.reason.arguments.code	string	query	False	Filter by last_reboot.reason.arguments.code • Introduced in: 9.10
last_reboot.reason.arguments.message	string	query	False	Filter by last_reboot.reason.arguments.message • Introduced in: 9.10
last_reboot.time	string	query	False	Filter by last_reboot.time

Name	Type	In	Required	Description
firmware_version	string	query	False	Filter by firmware_version
name	string	query	False	Filter by name
security_enabled	boolean	query	False	Filter by security_enabled
fc_ports.negotiated_data_rate	number	query	False	Filter by fc_ports.negotiated_data_rate
fc_ports.data_rate_capability	number	query	False	Filter by fc_ports.data_rate_capability
fc_ports.connection_mode	string	query	False	Filter by fc_ports.connection_mode
fc_ports.peer_wwn	string	query	False	Filter by fc_ports.peer_wwn
fc_ports.enabled	boolean	query	False	Filter by fc_ports.enabled
fc_ports.wwn	string	query	False	Filter by fc_ports.wwn
fc_ports.sfp.part_number	string	query	False	Filter by fc_ports.sfp.part_number
fc_ports.sfp.vendor	string	query	False	Filter by fc_ports.sfp.vendor
fc_ports.sfp.serial_number	string	query	False	Filter by fc_ports.sfp.serial_number
fc_ports.sfp.data_rate_capability	number	query	False	Filter by fc_ports.sfp.data_rate_capability
fc_ports.id	integer	query	False	Filter by fc_ports.id

Name	Type	In	Required	Description
fc_ports.configured_data_rate	number	query	False	Filter by fc_ports.configured_data_rate
fc_ports.state	string	query	False	Filter by fc_ports.state
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[storage_bridge]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "chassis_throughput_state": "ok",
      "errors": [
        {
          "component": {
            "name": "string",
            "unique_id": "string"
          },
          "reason": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          },
          "severity": "string",
          "type": "string"
        }
      ],
      "fc_ports": [
        {
          "configured_data_rate": 0,
          "connection_mode": "string",
          "data_rate_capability": 2,
          "negotiated_data_rate": 0,
          "peer_wwn": "200650eb1a238892",
          "sfp": {
            "data_rate_capability": 2,
            "part_number": "string",
            "serial_number": "string",
```

```
            "vendor": "string"
          },
          "state": "string",
          "wwn": "2100001086a54100"
        }
      ],
      "firmware_version": "4.10 007A",
      "ip_address": "string",
      "last_reboot": {
        "reason": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "time": "2020-12-09 00:47:58 -0500"
      },
      "managed_by": "string",
      "model": "FibreBridge6500N",
      "name": "ATTO_FibreBridge6500N_1",
      "paths": [
        {
          "name": "2c",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "source_port": {
            "id": "100050eb1a238892",
            "name": "rtp-fc03-41kk11:1"
          },
          "target_port": {
            "id": "100050eb1a238892",
            "name": "rtp-fc03-41kk11:6",
            "wwn": "2100001086a54100"
          }
        }
```

```
      ],
      "power_supply_units": [
        {
          "name": "string",
          "state": "string"
        }
      ],
      "sas_ports": [
        {
          "cable": {
            "part_number": "string",
            "serial_number": "string",
            "technology": "string",
            "vendor": "string"
          },
          "data_rate_capability": 0,
          "negotiated_data_rate": 0,
          "phy_1": {
            "state": "string"
          },
          "phy_2": {
            "state": "string"
          },
          "phy_3": {
            "state": "string"
          },
          "phy_4": {
            "state": "string"
          },
          "state": "string",
          "wwn": "2100001086a54100"
        }
      ],
      "serial_number": "FB7600N100004",
      "state": "string",
      "symbolic_name": "rtp-fcsas03-41kk11",
      "temperature_sensor": {
        "name": "Chassis temperature sensor",
        "state": "string"
      },
      "vendor": "atto",
      "wwn": 2000001086600476
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

component

Name	Type	Description
id	integer	Bridge error component ID
name	string	Bridge error component name
unique_id	string	Bridge error component unique ID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

errors

Name	Type	Description
component	component	

Name	Type	Description
reason	error	
severity	string	Bridge error severity
type	string	Bridge error type

sfp

Name	Type	Description
data_rate_capability	number	Bridge FC port SFP data rate capability, in Gbps
part_number	string	
serial_number	string	Bridge FC port SFP serial number
vendor	string	Bridge FC port SFP vendor

fc_ports

Name	Type	Description
configured_data_rate	number	Bridge FC port configured data rate, in Gbps
connection_mode	string	Bridge FC port configured connection mode
data_rate_capability	number	Bridge FC port data rate capability, in Gbps
enabled	boolean	Indicates whether the bridge FC port is enabled.
id	integer	Bridge FC port index
negotiated_data_rate	number	Bridge FC port negotiated data rate, in Gbps
peer_wwn	string	Bridge FC port peer port world wide name
sfp	sfp	
state	string	Bridge FC port state

Name	Type	Description
wwn	string	Bridge FC port world wide name

error

The error message and code explaining why the bridge rebooted.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

last_reboot

Name	Type	Description
reason	error	The error message and code explaining why the bridge rebooted.
time	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

source_port

Name	Type	Description
id	string	Initiator side switch port id
name	string	Initiator side switch port name

target_port

Name	Type	Description
id	string	Target side switch port id
name	string	Target side switch port name
wwn	string	Target side switch port world wide name

paths

Name	Type	Description
name	string	
node	node	
source_port	source_port	
target_port	target_port	

power_supply_units

Name	Type	Description
name	string	Power supply unit name
state	string	Power supply unit state

cable

Name	Type	Description
part_number	string	Bridge cable part number
serial_number	string	Bridge cable serial number
technology	string	Bridge cable type
vendor	string	Bridge cable vendor

phy_1

Name	Type	Description
state	string	Bridge SAS port PHY1 state

phy_2

Name	Type	Description
state	string	Bridge SAS port PHY2 state

phy_3

Name	Type	Description
state	string	Bridge SAS port PHY3 state

phy_4

Name	Type	Description
state	string	Bridge SAS port PHY4 state

sas_ports

Name	Type	Description
cable	cable	
data_rate_capability	number	Bridge SAS port data rate capability, in Gbps
enabled	boolean	Indicates whether a bridge SAS port is enabled.
id	integer	Bridge SAS port index
negotiated_data_rate	number	Bridge SAS port negotiated data rate, in Gbps
phy_1	phy_1	
phy_2	phy_2	
phy_3	phy_3	
phy_4	phy_4	
state	string	Bridge SAS port state
wwn	string	Bridge SAS port world wide name

temperature_sensor

Name	Type	Description
maximum	integer	Maximum safe operating temperature, in degrees Celsius.
minimum	integer	Minimum safe operating temperature, in degrees Celsius.
name	string	Temperature sensor name
reading	integer	Chassis temperature sensor reading, in degrees Celsius.
state	string	

storage_bridge

Name	Type	Description
chassis_throughput_state	string	Chassis throughput status
dram_single_bit_error_count	integer	
errors	array[errors]	
fc_ports	array[fc_ports]	
firmware_version	string	Bridge firmware version
ip_address	string	IP Address
last_reboot	last_reboot	
managed_by	string	
model	string	Bridge model
monitoring_enabled	boolean	Indicates whether monitoring is enabled for the bridge.
name	string	Bridge name
paths	array[paths]	
power_supply_units	array[power_supply_units]	
sas_ports	array[sas_ports]	
security_enabled	boolean	Indicates whether security is enabled for the bridge.
serial_number	string	Bridge serial number

Name	Type	Description
state	string	Bridge state
symbolic_name	string	Bridge symbolic name
temperature_sensor	temperature_sensor	
vendor	string	Bridge vendor
wwn	string	Bridge world wide name

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific bridge

GET `/storage/bridges/{wwn}`

Introduced In: 9.9

Retrieves a specific bridge

Related ONTAP commands

- `storage bridge show`

Learn more

- DOC /storage/bridges

Parameters

Name	Type	In	Required	Description
wwn	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
chassis_throughput_state	string	Chassis throughput status
dram_single_bit_error_count	integer	
errors	array[errors]	
fc_ports	array[fc_ports]	
firmware_version	string	Bridge firmware version
ip_address	string	IP Address
last_reboot	last_reboot	
managed_by	string	
model	string	Bridge model
monitoring_enabled	boolean	Indicates whether monitoring is enabled for the bridge.
name	string	Bridge name
paths	array[paths]	
power_supply_units	array[power_supply_units]	
sas_ports	array[sas_ports]	
security_enabled	boolean	Indicates whether security is enabled for the bridge.
serial_number	string	Bridge serial number
state	string	Bridge state
symbolic_name	string	Bridge symbolic name
temperature_sensor	temperature_sensor	
vendor	string	Bridge vendor
wwn	string	Bridge world wide name

Example response


```
{
  "chassis_throughput_state": "ok",
  "errors": [
    {
      "component": {
        "name": "string",
        "unique_id": "string"
      },
      "reason": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "severity": "string",
      "type": "string"
    }
  ],
  "fc_ports": [
    {
      "configured_data_rate": 0,
      "connection_mode": "string",
      "data_rate_capability": 2,
      "negotiated_data_rate": 0,
      "peer_wwn": "200650eb1a238892",
      "sfp": {
        "data_rate_capability": 2,
        "part_number": "string",
        "serial_number": "string",
        "vendor": "string"
      },
      "state": "string",
      "wwn": "2100001086a54100"
    }
  ],
  "firmware_version": "4.10 007A",
  "ip_address": "string",
  "last_reboot": {
    "reason": {
      "arguments": [
```

```
        {
          "code": "string",
          "message": "string"
        }
      ],
      "code": "4",
      "message": "entry doesn't exist"
    },
    "time": "2020-12-09 00:47:58 -0500"
  },
  "managed_by": "string",
  "model": "FibreBridge6500N",
  "name": "ATTO_FibreBridge6500N_1",
  "paths": [
    {
      "name": "2c",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "source_port": {
        "id": "100050eb1a238892",
        "name": "rtp-fc03-41kk11:1"
      },
      "target_port": {
        "id": "100050eb1a238892",
        "name": "rtp-fc03-41kk11:6",
        "wwn": "2100001086a54100"
      }
    }
  ],
  "power_supply_units": [
    {
      "name": "string",
      "state": "string"
    }
  ],
  "sas_ports": [
    {
      "cable": {
        "part_number": "string",
```

```
          "serial_number": "string",
          "technology": "string",
          "vendor": "string"
        },
        "data_rate_capability": 0,
        "negotiated_data_rate": 0,
        "phy_1": {
          "state": "string"
        },
        "phy_2": {
          "state": "string"
        },
        "phy_3": {
          "state": "string"
        },
        "phy_4": {
          "state": "string"
        },
        "state": "string",
        "wwn": "2100001086a54100"
      }
    ],
    "serial_number": "FB7600N100004",
    "state": "string",
    "symbolic_name": "rtp-fcsas03-41kk11",
    "temperature_sensor": {
      "name": "Chassis temperature sensor",
      "state": "string"
    },
    "vendor": "atto",
    "wwn": 2000001086600476
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

component

Name	Type	Description
id	integer	Bridge error component ID
name	string	Bridge error component name
unique_id	string	Bridge error component unique ID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

errors

Name	Type	Description
component	component	
reason	error	
severity	string	Bridge error severity
type	string	Bridge error type

sfp

Name	Type	Description
data_rate_capability	number	Bridge FC port SFP data rate capability, in Gbps
part_number	string	
serial_number	string	Bridge FC port SFP serial number
vendor	string	Bridge FC port SFP vendor

fc_ports

Name	Type	Description
configured_data_rate	number	Bridge FC port configured data rate, in Gbps
connection_mode	string	Bridge FC port configured connection mode
data_rate_capability	number	Bridge FC port data rate capability, in Gbps
enabled	boolean	Indicates whether the bridge FC port is enabled.
id	integer	Bridge FC port index
negotiated_data_rate	number	Bridge FC port negotiated data rate, in Gbps
peer_wwn	string	Bridge FC port peer port world wide name
sfp	sfp	
state	string	Bridge FC port state
wwn	string	Bridge FC port world wide name

error

The error message and code explaining why the bridge rebooted.

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message

last_reboot

Name	Type	Description
reason	error	The error message and code explaining why the bridge rebooted.
time	string	

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

source_port

Name	Type	Description
id	string	Initiator side switch port id
name	string	Initiator side switch port name

target_port

Name	Type	Description
id	string	Target side switch port id

Name	Type	Description
name	string	Target side switch port name
wwn	string	Target side switch port world wide name

paths

Name	Type	Description
name	string	
node	node	
source_port	source_port	
target_port	target_port	

power_supply_units

Name	Type	Description
name	string	Power supply unit name
state	string	Power supply unit state

cable

Name	Type	Description
part_number	string	Bridge cable part number
serial_number	string	Bridge cable serial number
technology	string	Bridge cable type
vendor	string	Bridge cable vendor

phy_1

Name	Type	Description
state	string	Bridge SAS port PHY1 state

phy_2

Name	Type	Description
state	string	Bridge SAS port PHY2 state

phy_3

Name	Type	Description
state	string	Bridge SAS port PHY3 state

phy_4

Name	Type	Description
state	string	Bridge SAS port PHY4 state

sas_ports

Name	Type	Description
cable	cable	
data_rate_capability	number	Bridge SAS port data rate capability, in Gbps
enabled	boolean	Indicates whether a bridge SAS port is enabled.
id	integer	Bridge SAS port index
negotiated_data_rate	number	Bridge SAS port negotiated data rate, in Gbps
phy_1	phy_1	
phy_2	phy_2	
phy_3	phy_3	
phy_4	phy_4	
state	string	Bridge SAS port state
wwn	string	Bridge SAS port world wide name

temperature_sensor

Name	Type	Description
maximum	integer	Maximum safe operating temperature, in degrees Celsius.
minimum	integer	Minimum safe operating temperature, in degrees Celsius.
name	string	Temperature sensor name
reading	integer	Chassis temperature sensor reading, in degrees Celsius.
state	string	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster-wide storage

Storage cluster endpoint overview

Retrieves cluster-wide storage details across the different tiers.
Storage details include storage efficiency, block storage and cloud storage information.

Example

Retrieving cluster-wide storage details

The following example shows the details returned for a GET request on cluster-wide storage:

```
# The API:
/api/storage/cluster
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/storage/cluster" -H "accept:
application/hal+json"

# The response:
{
"efficiency": {
  "savings": 143360,
  "ratio": 1.134099616858238,
  "logical_used": 1212416
},
"efficiency_without_snapshots": {
  "savings": 0,
  "ratio": 1,
  "logical_used": 167936
},
"efficiency_without_snapshots_flexclones": {
  "savings": 0,
  "ratio": 1,
  "logical_used": 167936
},
"block_storage": {
  "used": 6269812736,
  "size": 56125612032,
  "available": 49855799296,
  "physical_used": 1838284800,
  "inactive_data": 0,
  "medias": [
    {
      "type": "ssd",
      "size": 9891430400,
      "available": 3728039936,
      "used": 6163390464,
      "physical_used": 1832886272,
      "efficiency": {
        "savings": 0,
        "ratio": 1,
        "logical_used": 0
      },
      "efficiency_without_snapshots": {
        "savings": 0,
        "ratio": 1,
        "logical_used": 0
      },
      "efficiency_without_snapshots_flexclones": {
        "savings": 0,
```

```
        "ratio": 1,
        "logical_used": 0
      }
    },
    {
      "type": "vmdisk",
      "size": 46234181632,
      "available": 46127759360,
      "used": 106422272,
      "physical_used": 5398528,
      "efficiency": {
        "savings": 282624,
        "ratio": 1.303964757709251,
        "logical_used": 1212416
      },
      "efficiency_without_snapshots": {
        "savings": 0,
        "ratio": 1,
        "logical_used": 167936
      },
      "efficiency_without_snapshots_flexclones": {
        "savings": 0,
        "ratio": 1,
        "logical_used": 167936
      }
    }
  ]
}
}
```

Report cluster-wide storage details across different tiers

GET `/storage/cluster`

Introduced In: 9.6

Retrieves cluster-wide storage details across the different tiers. By default, this endpoint returns all fields. Storage details include storage efficiency, block storage and cloud storage information.
Supports the following roles: admin, and readonly.

Parameters

Name	Type	In	Required	Description
efficiency_without_snapshots.logical_used	integer	query	False	Filter by efficiency_without_snapshots.logical_used • Introduced in: 9.14
efficiency_without_snapshots.savings	integer	query	False	Filter by efficiency_without_snapshots.savings • Introduced in: 9.14
efficiency_without_snapshots.ratio	number	query	False	Filter by efficiency_without_snapshots.ratio • Introduced in: 9.14
efficiency_without_snapshots_flexclones.logical_used	integer	query	False	Filter by efficiency_without_snapshots_flexclones.logical_used • Introduced in: 9.14
efficiency_without_snapshots_flexclones.savings	integer	query	False	Filter by efficiency_without_snapshots_flexclones.savings • Introduced in: 9.14
efficiency_without_snapshots_flexclones.ratio	number	query	False	Filter by efficiency_without_snapshots_flexclones.ratio • Introduced in: 9.14

Name	Type	In	Required	Description
efficiency.logical_used	integer	query	False	Filter by efficiency.logical_used • Introduced in: 9.14
efficiency.savings	integer	query	False	Filter by efficiency.savings • Introduced in: 9.14
efficiency.ratio	number	query	False	Filter by efficiency.ratio • Introduced in: 9.14
cloud_storage.used	integer	query	False	Filter by cloud_storage.used • Introduced in: 9.14
block_storage.inactive_data	integer	query	False	Filter by block_storage.inactive_data • Introduced in: 9.14
block_storage.available	integer	query	False	Filter by block_storage.available • Introduced in: 9.14
block_storage.used	integer	query	False	Filter by block_storage.used • Introduced in: 9.14

Name	Type	In	Required	Description
block_storage.physical_used	integer	query	False	Filter by block_storage.physical_used • Introduced in: 9.14
block_storage.size	integer	query	False	Filter by block_storage.size • Introduced in: 9.14
block_storage.medias.efficiency_without_snapshots_flexclones.logical_used	integer	query	False	Filter by block_storage.medias.efficiency_without_snapshots_flexclones.logical_used • Introduced in: 9.14
block_storage.medias.efficiency_without_snapshots_flexclones.savings	integer	query	False	Filter by block_storage.medias.efficiency_without_snapshots_flexclones.savings • Introduced in: 9.14
block_storage.medias.efficiency_without_snapshots_flexclones.ratio	number	query	False	Filter by block_storage.medias.efficiency_without_snapshots_flexclones.ratio • Introduced in: 9.14
block_storage.medias.efficiency_without_snapshots.logical_used	integer	query	False	Filter by block_storage.medias.efficiency_without_snapshots.logical_used • Introduced in: 9.14

Name	Type	In	Required	Description
block_storage.media s.efficiency_without_ snapshots.savings	integer	query	False	Filter by block_storage.media s.efficiency_without_ snapshots.savings • Introduced in: 9.14
block_storage.media s.efficiency_without_ snapshots.ratio	number	query	False	Filter by block_storage.media s.efficiency_without_ snapshots.ratio • Introduced in: 9.14
block_storage.media s.used	integer	query	False	Filter by block_storage.media s.used • Introduced in: 9.14
block_storage.media s.physical_used	integer	query	False	Filter by block_storage.media s.physical_used • Introduced in: 9.14
block_storage.media s.size	integer	query	False	Filter by block_storage.media s.size • Introduced in: 9.14
block_storage.media s.efficiency.logical_u sed	integer	query	False	Filter by block_storage.media s.efficiency.logical_u sed • Introduced in: 9.14

Name	Type	In	Required	Description
block_storage.media s.efficiency.savings	integer	query	False	Filter by block_storage.media s.efficiency.savings • Introduced in: 9.14
block_storage.media s.efficiency.ratio	number	query	False	Filter by block_storage.media s.efficiency.ratio • Introduced in: 9.14
block_storage.media s.type	string	query	False	Filter by block_storage.media s.type • Introduced in: 9.14
block_storage.media s.available	integer	query	False	Filter by block_storage.media s.available • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
block_storage	block_storage	Configuration information for the locally attached portion of the storage across the cluster. When a cloud store is also used by the storage, this is referred to as the performance tier.

Name	Type	Description
cloud_storage	cloud_storage	Configuration information for the cloud storage portion of all the aggregates across the cluster. This is referred to as the capacity tier.
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and FlexClone volumes.
metric	metric	Cluster capacity numbers, such as total size, used size, and available size.

Example response


```
{
  "block_storage": {
    "available": 0,
    "inactive_data": 0,
    "medias": [
      {
        "efficiency": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "efficiency_without_snapshots": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "efficiency_without_snapshots_flexclones": {
          "logical_used": 0,
          "ratio": 0,
          "savings": 0
        },
        "type": "string"
      }
    ],
    "physical_used": 0,
    "size": 0,
    "used": 0
  },
  "efficiency": {
    "logical_used": 0,
    "ratio": 0,
    "savings": 0
  },
  "efficiency_without_snapshots": {
    "logical_used": 0,
    "ratio": 0,
    "savings": 0
  },
  "efficiency_without_snapshots_flexclones": {
    "logical_used": 0,
    "ratio": 0,
    "savings": 0
  },
  "metric": {
```

```
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

efficiency

Storage efficiency.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots

Storage efficiency that does not include the savings provided by snapshots.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

efficiency_without_snapshots_flexclones

Storage efficiency that does not include the savings provided by snapshots and FlexClone volumes.

Name	Type	Description
logical_used	integer	Logical used
ratio	number	Data reduction ratio (logical_used / used)
savings	integer	Space saved by storage efficiencies (logical_used - used)

medias

Name	Type	Description
available	integer	Available space across the cluster based on media type.
efficiency	efficiency	Storage efficiency.
efficiency_without_snapshots	efficiency_without_snapshots	Storage efficiency that does not include the savings provided by snapshots.
efficiency_without_snapshots_flexclones	efficiency_without_snapshots_flexclones	Storage efficiency that does not include the savings provided by snapshots and FlexClone volumes.
physical_used	integer	Total physical used space across the cluster based on media type.
size	integer	Total space across the cluster based on media type.
type	string	The type of media being used.
used	integer	Used space across the cluster based on media type.

block_storage

Configuration information for the locally attached portion of the storage across the cluster. When a cloud store is also used by the storage, this is referred to as the performance tier.

Name	Type	Description
available	integer	Available space across the cluster.
inactive_data	integer	Inactive data across the cluster.
medias	array[medias]	Configuration information based on type of media. For example, SSD media type information includes the sum of all the SSD storage across the cluster.
physical_used	integer	Total physical used space across the cluster.

Name	Type	Description
size	integer	Total space across the cluster.
used	integer	Used space (includes volume reserves) across the cluster.

cloud_storage

Configuration information for the cloud storage portion of all the aggregates across the cluster. This is referred to as the capacity tier.

Name	Type	Description
used	integer	Total space used in cloud.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

metric

Cluster capacity numbers, such as total size, used size, and available size.

Name	Type	Description
_links	_links	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage disks

Storage disks endpoint overview

Retrieving storage disk information

The storage disk GET API retrieves all of the disks in the cluster.

Examples

1) Retrieve a list of disks from the cluster.

The following example shows the response with a list of disks in the cluster:

```
# The API:
/api/storage/disks

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/disks" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "name": "1.24.4",
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.4"
      }
    }
  },
  {
    "name": "1.24.3",
```

```
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.3"
      }
    }
  },
  {
    "name": "1.24.5",
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.5"
      }
    }
  },
  {
    "name": "1.24.0",
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.0"
      }
    }
  },
  {
    "name": "1.24.2",
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.2"
      }
    }
  },
  {
    "name": "1.24.1",
    "_links": {
      "self": {
        "href": "/api/storage/disks/1.24.1"
      }
    }
  }
],
"num_records": 6,
"_links": {
  "self": {
    "href": "/api/storage/disks"
  }
}
}
```

2) Retrieve a specific disk from the cluster.

The following example shows the response of the requested disk. If there is no disk with the requested name, an error is returned:

```
# The API:
/api/storage/disks/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/disks/1.24.3" -H "accept:
application/hal+json"

# The response:
{
"name": "1.24.3",
"uid":
"50000394:0808AA88:00000000:00000000:00000000:00000000:00000000:00000000:0
0000000:00000000",
"serial_number": "EC47PC5021SW",
"model": "X421_FAL12450A10",
"vendor": "NETAPP",
"firmware_version": "NA02",
"usable_size": 438304768000,
"rpm": 10000,
"type": "sas",
"effective_type": "sas",
"class": "performance",
"container_type": "aggregate",
"pool": "pool0",
"state": "present",
"node": {
  "uuid": "3a89ed49-8c6d-11e8-93bc-00a0985a64b6",
  "name": "node-2",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/3a89ed49-8c6d-11e8-93bc-00a0985a64b6"
    }
  }
},
"home_node": {
  "uuid": "3a89ed49-8c6d-11e8-93bc-00a0985a64b6",
  "name": "node-2",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/3a89ed49-8c6d-11e8-93bc-00a0985a64b6"
```

```
    }
  }
},
"aggregates": [
  {
    "uuid": "3fd9c345-ba91-4949-a7b1-6e2b898d74e3",
    "name": "node_2_SAS_1",
    "_links": {
      "self": {
        "href": "/api/storage/aggregates/3fd9c345-ba91-4949-a7b1-
6e2b898d74e3"
      }
    }
  }
],
"shelf": {
  "uid": "10318311901725526608",
  "_links": {
    "self": {
      "href": "/api/storage/shelves/10318311901725526608"
    }
  }
},
"local": true,
"paths": [
{
   "initiator": "3a",
   "port_name": "B",
   "port_type": "sas",
   "wwnn": "5000cca02f0e6768",
   "wwpn": "5000cca02f0e676a",
   "node": {
     "name": "vsim3",
     "uuid": "3f7fa09a-5c56-11ec-b366-005056bbbb3f",
     "_links": {
        "self": {
          "href": "/api/cluster/nodes/3f7fa09a-5c56-11ec-b366-
005056bbbb3f"
        }
     }
   }
 },
 {
   "initiator": "3d",
   "port_name": "A",
   "port_type": "sas",
```

```
    "wwnn": "5000cca02f0e6768",
    "wwpn": "5000cca02f0e6769",
    "node": {
      "name": "vsim4",
      "uuid": "4f7fa09a-5c56-11ec-b366-005056bbbb3f",
      "_links": {
         "self": {
           "href": "/api/cluster/nodes/4f7fa09a-5c56-11ec-b366-
005056bbbb3f"
         }
      }
    }
},
{
    "initiator": "3d",
    "port_name": "A",
    "port_type": "sas",
    "wwnn": "5000cca02f0e6768",
    "wwpn": "5000cca02f0e6769",
    "node": {
      "name": "vsim3",
      "uuid": "3f7fa09a-5c56-11ec-b366-005056bbbb3f",
      "_links": {
         "self": {
           "href": "/api/cluster/nodes/3f7fa09a-5c56-11ec-b366-
005056bbbb3f"
         }
      }
    }
},
{
    "initiator": "3a",
    "port_name": "B",
    "port_type": "sas",
    "wwnn": "5000cca02f0e6768",
    "wwpn": "5000cca02f0e676a",
    "node": {
      "name": "vsim4",
      "uuid": "4f7fa09a-5c56-11ec-b366-005056bbbb3f",
      "_links": {
         "self": {
           "href": "/api/cluster/nodes/4f7fa09a-5c56-11ec-b366-
005056bbbb3f"
         }
      }
    }
```

```
}
],
"outage": {
  "persistently_failed": true,
  "reason": {
    "message": "Failed disk. Reason: \"admin failed\".",
    "code": "721081"
  }
},
"bay": 3,
"_links": {
  "self": {
    "href": "/api/storage/disks/1.24.3"
  }
},
"error": [
{
  "reason": {
    "message": "\"The node is configured with All-Flash Optimized
personality and this disk is not an SSD. The disk needs to be removed from
the system.\"",
    "code": "721082"
  },
  "type": "notallflashdisk"
}
],
"bytes_per_sector": 512,
"sector_count": 1172123568,
"right_size_sector_count": 5579776,
"physical_size": 438804988000,
"stats": {
  "average_latency": 6,
  "throughput": 1957888,
  "iops_total": 12854,
  "path_error_count": 0,
  "power_on_hours": 11797
 }
}
```


3) Retrieving a specific disk from the hypervisor

The following example shows the response of the requested disk. If there is no disk with the requested name, an error is returned:

```
# The API:
/api/storage/disks/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/disks/NET-3.2" -H "accept:
application/hal+json"

# The response:
{
"name": "NET-3.2",
"uid":
"32343637:65386464:00000000:00000000:00000000:00000000:00000000:00000000:0
0000000:00000000",
"serial_number": "3234363765386464",
"model": "PHA-DISK",
"vendor": "NETAPP",
"firmware_version": "0001",
"type": "vmdisk",
"class": "virtual",
"container_type": "mediator",
"pool": "pool0",
"node": {
    "uuid": "f4cb78ba-5841-11ec-80c4-916f62b4cd44",
    "name": "example_node_name",
    "_links": {
      "self": {
          "href": "/api/cluster/nodes/f4cb78ba-5841-11ec-80c4-
916f62b4cd44"
      }
    }
},
"home_node": {
    "uuid": "f4cb78ba-5841-11ec-80c4-916f62b4cd44",
    "name": "example_node_name",
    "_links": {
      "self": {
          "href": "/api/cluster/nodes/f4cb78ba-5841-11ec-80c4-
916f62b4cd44"
      }
    }
},
"local": true,
"paths": [
    {
      "initiator": "0f",
```

```
      "port_name": "A",
      "port_type": "sas",
      "wwnn": "53059d50444f5476",
      "wwpn": "53059d50444f5476",
      "vmdisk_hypervisor_file_name": "LUN 4.0",
      "node": {
          "name": "example_node_name",
          "uuid": "f4cb78ba-5841-11ec-80c4-916f62b4cd44",
          "_links": {
            "self": {
                "href": "/api/cluster/nodes/f4cb78ba-5841-11ec-80c4-
916f62b4cd44"
            }
          }
      }
    },
    {
      "initiator": "0f",
      "port_name": "A",
      "port_type": "sas",
      "wwnn": "53059d50444f5476",
      "wwpn": "53059d50444f5476",
      "vmdisk_hypervisor_file_name": "LUN 2.0",
      "node": {
          "name": "example_node_name",
          "uuid": "f4cb78ba-5841-11ec-80c4-916f62b4cd44",
          "_links": {
            "self": {
                "href": "/api/cluster/nodes/f4cb78ba-5841-11ec-80c4-
916f62b4cd44"
            }
          }
      }
    }
],
"outage": {
    "persistently_failed": false,
    "reason": {
      "message": "Failed disk. Reason: \"\".",
      "code": "721081"
    }
},
"self_encrypting": false,
"fips_certified": false,
"bytes_per_sector": 512,
"sector_count": 204808,
```

```
"right_size_sector_count": 5579776,
"physical_size": 204808,
"stats": {
    "average_latency": 2157188883,
    "throughput": 4096,
    "iops_total": 1,
    "path_error_count": 0,
    "power_on_hours": 0
},
"_links": {
    "self": {
      "href": "/api/storage/disks/NET-3.2"
    }
}
}
```

Modifying storage disk

The storage disk PATCH API modifies disk ownership, unfails a disk, updates encrypting drive authentication keys (AKs), sanitizes encrypting drives, or sanitizes non-encrypting spare drives in the cluster.
The storage disk API currently supports patching one attribute at a time.

Updating the disk ownership for a specified disk. Disk ownership cannot be updated on the ASA r2 platform.

1. When the disk is not assigned

When the disk is a spare (or unowned) disk and node name is specified, the PATCH operation assigns the disk to the specified node.
Optionally, pool name can also be specified along with node name. Accepted pool names are: pool0, pool1.

2. When the disk is already assigned

When the disk is already assigned (already has a owner), and a new node is specified, the PATCH operation changes the ownership to the new node.
Optionally, pool name can also be specified along with node name. Accepted pool names are: pool0, pool1.

Removing the disk ownership for a specified disk

When the disk is already assigned, and node name is specified as null (no-quotes), the PATCH operation removes the owner.

Examples

1. Update the disk ownership for an unowned disk

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -H
"accept: application/hal+json" -H "Content-Type: application/hal+json" -d
'{"node": {"name": "node-name"}}'

# The response:
{
}
```

2. Update the disk ownership for an already owned disk

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -H
"accept: application/hal+json" -H "Content-Type: application/hal+json" -d
'{"node": {"name": "node-name"}}'

# The response:
{
}
```

3. Update the disk pool for a disk (can be either owned or unowned).

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -H
"accept: application/hal+json" -H "Content-Type: application/hal+json" -d
'{"node": {"name": "node-name"}, "pool": "pool0"}'

# The response:
{
}
```

4. Rekey the data authentication key (AK) of all encrypting drives to an authentication key (AK) selected automatically by the system

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/storage/disks?name=*&encryption_operation=rekey_data_auto_id" -H
"accept: application/hal+json" -H "Content-Type: application/hal+json"

# The response contains the number of disks attempted.
{
 "num_records": 32
}
```

5. Cryptographically sanitize a spare or broken disk

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-
name>&encryption_operation=sanitize_disk" -H "accept:
application/hal+json" -H "Content-Type: application/hal+json"

# The response contains the number of disks attempted.
{
 "num_records": 1
}
```

6. Unfailing a disk to a spare.

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -d
'{"state": "spare"}' -H "accept: application/hal+json" -H "Content-Type:
application/hal+json"

# The response:
{
}
```

7. Unfailing a disk and attempting to reassimilate filesystem labels.

If unable or unnecessary to reassimilate filesystem labels, the disk will be set as spare.

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -d
'{"state": "present"}' -H "accept: application/hal+json" -H "Content-Type:
application/hal+json"

# The response:
{
}
```

8. Sanitize spare disks (non-cryptographically)

```
# The API:
/api/storage/disks

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/disks?name=<disk-name>" -d
'{"sanitize_spare": "true"}' -H "accept: application/hal+json" -H
"Content-Type: application/hal+json"

# The response:
{
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/disks?name=<disk-name>"
  }
}
}
```

Retrieve a collection of disks

GET `/storage/disks`

Introduced In: 9.6

Retrieves a collection of disks.

Related ONTAP commands

- `storage disk show`

Learn more

- DOC /storage/disks

Parameters

Name	Type	In	Required	Description
rated_life_used_percent	integer	query	False	Filter by rated_life_used_percent
bay	integer	query	False	Filter by bay
control_standard	string	query	False	Filter by control_standard • Introduced in: 9.11
location	string	query	False	Filter by location • Introduced in: 9.14
shelf.uid	string	query	False	Filter by shelf.uid
state	string	query	False	Filter by state
paths.vmdisk_hypervisor_file_name	string	query	False	Filter by paths.vmdisk_hypervisor_file_name • Introduced in: 9.11
paths.initiator	string	query	False	Filter by paths.initiator • Introduced in: 9.9
paths.node.uuid	string	query	False	Filter by paths.node.uuid • Introduced in: 9.11

Name	Type	In	Required	Description
paths.disk_path_name	string	query	False	Filter by paths.disk_path_name • Introduced in: 9.14
paths.wwpn	string	query	False	Filter by paths.wwpn • Introduced in: 9.9
paths.port_name	string	query	False	Filter by paths.port_name • Introduced in: 9.9
paths.wwnn	string	query	False	Filter by paths.wwnn • Introduced in: 9.9
paths.port_type	string	query	False	Filter by paths.port_type • Introduced in: 9.9
paths.node.name	string	query	False	Filter by paths.node.name • Introduced in: 9.11
fips_certified	boolean	query	False	Filter by fips_certified • Introduced in: 9.7
right_size_sector_count	integer	query	False	Filter by right_size_sector_count • Introduced in: 9.11

Name	Type	In	Required	Description
physical_size	integer	query	False	Filter by physical_size • Introduced in: 9.11
class	string	query	False	Filter by class
storage_pool.uuid	string	query	False	Filter by storage_pool.uuid • Introduced in: 9.11
storage_pool.name	string	query	False	Filter by storage_pool.name • Introduced in: 9.11
aggregates.uuid	string	query	False	Filter by aggregates.uuid
aggregates.name	string	query	False	Filter by aggregates.name
pool	string	query	False	Filter by pool
error.reason.code	string	query	False	Filter by error.reason.code • Introduced in: 9.9
error.reason.message	string	query	False	Filter by error.reason.message • Introduced in: 9.9
error.reason.arguments.code	string	query	False	Filter by error.reason.arguments.code • Introduced in: 9.10

Name	Type	In	Required	Description
error.reason.arguments.message	string	query	False	Filter by error.reason.arguments.message • Introduced in: 9.10
error.type	string	query	False	Filter by error.type • Introduced in: 9.9
firmware_version	string	query	False	Filter by firmware_version
name	string	query	False	Filter by name
outage.persistently_failed	boolean	query	False	Filter by outage.persistently_failed • Introduced in: 9.9
outage.reason.code	string	query	False	Filter by outage.reason.code • Introduced in: 9.9
outage.reason.message	string	query	False	Filter by outage.reason.message • Introduced in: 9.9
outage.reason.arguments.code	string	query	False	Filter by outage.reason.arguments.code • Introduced in: 9.10

Name	Type	In	Required	Description
outage.reason.arguments.message	string	query	False	Filter by outage.reason.arguments.message • Introduced in: 9.10
uid	string	query	False	Filter by uid
effective_type	string	query	False	Filter by effective_type • Introduced in: 9.9
virtual.container	string	query	False	Filter by virtual.container • Introduced in: 9.11
virtual.storage_account	string	query	False	Filter by virtual.storage_account • Introduced in: 9.11
virtual.target_address	string	query	False	Filter by virtual.target_address • Introduced in: 9.13
virtual.object	string	query	False	Filter by virtual.object • Introduced in: 9.11
type	string	query	False	Filter by type
vendor	string	query	False	Filter by vendor
usable_size	integer	query	False	Filter by usable_size

Name	Type	In	Required	Description
self_encrypting	boolean	query	False	Filter by self_encrypting • Introduced in: 9.7
key_id.fips	string	query	False	Filter by key_id.fips • Introduced in: 9.7
key_id.data	string	query	False	Filter by key_id.data • Introduced in: 9.7
serial_number	string	query	False	Filter by serial_number
compliance_standard	string	query	False	Filter by compliance_standard • Introduced in: 9.11
drawer.id	integer	query	False	Filter by drawer.id
drawer.slot	integer	query	False	Filter by drawer.slot
model	string	query	False	Filter by model
stats.iops_total	integer	query	False	Filter by stats.iops_total • Introduced in: 9.9
stats.average_latency	integer	query	False	Filter by stats.average_latency • Introduced in: 9.9

Name	Type	In	Required	Description
stats.throughput	integer	query	False	Filter by stats.throughput • Introduced in: 9.9
stats.power_on_hours	integer	query	False	Filter by stats.power_on_hours • Introduced in: 9.9
stats.path_error_count	integer	query	False	Filter by stats.path_error_count • Introduced in: 9.9
sector_count	integer	query	False	Filter by sector_count • Introduced in: 9.9
rpm	integer	query	False	Filter by rpm
local	boolean	query	False	Filter by local • Introduced in: 9.9
home_node.uuid	string	query	False	Filter by home_node.uuid
home_node.name	string	query	False	Filter by home_node.name
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
dr_node.uuid	string	query	False	Filter by dr_node.uuid

Name	Type	In	Required	Description
dr_node.name	string	query	False	Filter by dr_node.name
bytes_per_sector	integer	query	False	Filter by bytes_per_sector • Introduced in: 9.9
protection_mode	string	query	False	Filter by protection_mode • Introduced in: 9.7
overall_security	string	query	False	Filter by overall_security • Introduced in: 9.11
container_type	string	query	False	Filter by container_type
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[disk]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "aggregates": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "bay": 1,
      "bytes_per_sector": 520,
      "class": "solid_state",
      "compliance_standard": "FIPS 140-2",
      "container_type": "spare",
      "control_standard": "TCG Enterprise",
      "dr_node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "effective_type": "vmdisk",
      "encryption_operation": "string",
      "error": [
        {
          "reason": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
```

```
            "code": "4",
            "message": "entry doesn't exist"
          },
          "type": "notallflashdisk"
        }
      ],
      "firmware_version": "NA51",
      "home_node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "key_id": {
        "data": "string",
        "fips": "string"
      },
      "location": "node-01",
      "model": "X421_HCOBE450A10",
      "name": "1.0.1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "outage": {
        "reason": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        }
      },
      "overall_security": "Level 2",
      "paths": [
```

```
        {
          "disk_path_name": "vsim4:3a.10",
          "initiator": "3a",
          "node.name": "vsim4",
          "node.uuid": "cf7fe057-526d-11ec-af4e-0050568e9df0",
          "port_name": "A",
          "port_type": "sas",
          "vmdisk_hypervisor_file_name": "xvds vol0a0567ae156ca59f6",
          "wwnn": "5000c2971c1b2b8c",
          "wwpn": "5000c2971c1b2b8d"
        }
      ],
      "physical_size": 228930,
      "pool": "pool0",
      "protection_mode": "data",
      "rated_life_used_percent": 10,
      "right_size_sector_count": 1172123568,
      "rpm": 15000,
      "sector_count": 1172123568,
      "serial_number": "KHG2VX8R",
      "shelf": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uid": "7777841915827391056"
      },
      "state": "present",
      "stats": {
        "average_latency": 3,
        "iops_total": 12854,
        "path_error_count": 0,
        "power_on_hours": 21016,
        "throughput": 1957888
      },
      "storage_pool": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "storage_pool_1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "type": "ssd",
```

```
      "uid":
"002538E5:71B00B2F:00000000:00000000:00000000:00000000:00000000:0000000
0:00000000:00000000",
      "usable_size": 959934889984,
      "vendor": "NETAPP",
      "virtual": {
        "container": "nviet12122018113936-rg",
        "object": "f1fu63se",
        "storage_account": "nviet12122018113936ps",
        "target_address": "string"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_node

Name	Type	Description
name	string	
uuid	string	

drawer

Name	Type	Description
id	integer	
slot	integer	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

error

The message and code detailing the error state of this disk.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

disk_error_info

Name	Type	Description
reason	error	The message and code detailing the error state of this disk.
type	string	Disk error type.

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_id

Name	Type	Description
data	string	Key ID of the data authentication key
fips	string	Key ID of the FIPS authentication key

node

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
uuid	string	

error

This error message and code explaining the disk failure.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

outage

Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.

Name	Type	Description
persistently_failed	boolean	Indicates whether RAID maintains the state of this disk as failed across reboots.
reason	error	This error message and code explaining the disk failure.

disk_path_info

Name	Type	Description
disk_path_name	string	Path-based disk name.
initiator	string	Initiator port.
node.name	string	Controller with the initiator port for this path.
node.uuid	string	Controller UUID, to identify node for this path.
port_name	string	Name of the disk port.
port_type	string	Disk port type.

Name	Type	Description
vmdisk_hypervisor_file_name	string	Virtual disk hypervisor file name.
wwnn	string	Target device's World Wide Node Name.
wwpn	string	Target device's World Wide Port Name.

shelf

Shelf

Name	Type	Description
_links	_links	
uid	string	

stats

Name	Type	Description
average_latency	integer	Average I/O latency across all active paths, in milliseconds.
iops_total	integer	Total I/O operations per second read and written to this disk across all active paths.
path_error_count	integer	Disk path error count; failed I/O operations.
power_on_hours	integer	Hours powered on.
throughput	integer	Total disk throughput per second across all active paths, in bytes.

storage_pool

Shared Storage Pool

Name	Type	Description
_links	_links	
name	string	
uuid	string	

virtual

Information about backing storage for disks on cloud platforms.

Name	Type	Description
container	string	Container name of the virtual disk.
object	string	Object name of the virtual disk.
storage_account	string	Storage account name of the virtual disk.
target_address	string	Target address of the virtual disk.

disk

Name	Type	Description
aggregates	array[aggregates]	List of aggregates sharing this disk
bay	integer	Disk shelf bay
bytes_per_sector	integer	Bytes per sector.
class	string	Disk class
compliance_standard	string	Security standard that the device is certified to.
container_type	string	Type of overlying disk container
control_standard	string	Standard that the device supports for encryption control.
dr_node	dr_node	
drawer	drawer	
effective_type	string	Effective Disk type
encryption_operation	string	This field should only be set as a query parameter in a PATCH operation. It is input only and won't be returned by a subsequent GET.
error	array[disk_error_info]	List of disk errors information.

Name	Type	Description
fips_certified	boolean	
firmware_version	string	
home_node	home_node	
key_id	key_id	
local	boolean	Indicates if a disk is locally attached versus being remotely attached. A locally attached disk resides in the same proximity as the host cluster versus been attached to the remote cluster.
location	string	Physical location of the disk
model	string	
name	string	Cluster-wide disk name
node	node	
outage	outage	Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.
overall_security	string	Overall Security rating, for FIPS-certified devices.
paths	array[disk_path_info]	List of paths to a disk
physical_size	integer	Physical size, in units of bytes
pool	string	Pool to which disk is assigned

Name	Type	Description
protection_mode	string	Mode of drive data protection and FIPS compliance. Possible values are: • *open* - Data is unprotected • *data* - Data protection only, without FIPS compliance • *part* - Data is unprotected; other FIPS compliance settings present • *full* - Full data and FIPS compliance protection • *miss* - Protection mode information is not available
rated_life_used_percent	integer	Percentage of rated life used
right_size_sector_count	integer	Number of usable disk sectors that remain after subtracting the right-size adjustment for this disk.
rpm	integer	Revolutions per minute
sanitize_spare	boolean	Confirms spare disk sanitization (non-cryptographically).
sector_count	integer	Number of sectors on the disk.
self_encrypting	boolean	
serial_number	string	
shelf	shelf	Shelf
state	string	State
stats	stats	
storage_pool	storage_pool	Shared Storage Pool
type	string	Disk interface type
uid	string	The unique identifier for a disk
usable_size	integer	
vendor	string	

Name	Type	Description
virtual	virtual	Information about backing storage for disks on cloud platforms.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update disk ownership, change authentication keys, or sanitize disks

PATCH `/storage/disks`

Introduced In: 9.7

Updates disk ownership, changes authentication keys, sanitizes encrypting disks, or sanitizes non-encrypting spare disks.

Related ONTAP commands

- `storage disk assign`
- `storage disk removeowner`
- `storage encryption disk modify -data-key-id`
- `storage encryption disk sanitize`
- `security key-manager key query -key-type NSE-AK`
- `storage disk unfail`
- `storage disk sanitize-spare`

Learn more

- DOC /storage/disks

Parameters

Name	Type	In	Required	Description
name	string	query	False	Disk name
node	string	query	False	Node to assign disk. This property is not supported on the ASA r2 platform. • Introduced in: 9.8
pool	string	query	False	Pool to assign disk to • Introduced in: 9.11

Name	Type	In	Required	Description
encryption_operation	string	query	False	Name of the operation to apply to encrypting disks. • rekey_data_default changes the data authentication key (AK) to the drive-unique Manufacture Secure ID (MSID) value. Allows the drive to be attached to other clusters. Disables data-at-rest protection without erasing the data. • rekey_data_auto_id changes the data authentication key (AK) to an AK the cluster selects automatically. Enables data-at-rest protection. • sanitize_disk cryptographically erases all user data from a spare or broken drive by altering the data encryption key. Resets the data AK to the drive-unique MSID value and disables data-at-rest protection. Used when a drive is being repurposed or returned. • enum: ["rekey_data_default", "rekey_data_auto_id",

Name	Type	In	Required	Description
sanitize_spare	boolean	query	False	Confirms spare disk sanitization (non-cryptographically). • Introduced in: 9.16
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
aggregates	array[aggregates]	List of aggregates sharing this disk
bay	integer	Disk shelf bay
bytes_per_sector	integer	Bytes per sector.
class	string	Disk class
compliance_standard	string	Security standard that the device is certified to.
container_type	string	Type of overlying disk container
control_standard	string	Standard that the device supports for encryption control.
dr_node	dr_node	
drawer	drawer	
effective_type	string	Effective Disk type
encryption_operation	string	This field should only be set as a query parameter in a PATCH operation. It is input only and won't be returned by a subsequent GET.
error	array[disk_error_info]	List of disk errors information.
fips_certified	boolean	

Name	Type	Description
firmware_version	string	
home_node	home_node	
key_id	key_id	
local	boolean	Indicates if a disk is locally attached versus being remotely attached. A locally attached disk resides in the same proximity as the host cluster versus been attached to the remote cluster.
location	string	Physical location of the disk
model	string	
name	string	Cluster-wide disk name
node	node	
outage	outage	Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.
overall_security	string	Overall Security rating, for FIPS-certified devices.
paths	array[disk_path_info]	List of paths to a disk
physical_size	integer	Physical size, in units of bytes
pool	string	Pool to which disk is assigned

Name	Type	Description
protection_mode	string	Mode of drive data protection and FIPS compliance. Possible values are: • *open* - Data is unprotected • *data* - Data protection only, without FIPS compliance • *part* - Data is unprotected; other FIPS compliance settings present • *full* - Full data and FIPS compliance protection • *miss* - Protection mode information is not available
rated_life_used_percent	integer	Percentage of rated life used
right_size_sector_count	integer	Number of usable disk sectors that remain after subtracting the right-size adjustment for this disk.
rpm	integer	Revolutions per minute
sanitize_spare	boolean	Confirms spare disk sanitization (non-cryptographically).
sector_count	integer	Number of sectors on the disk.
self_encrypting	boolean	
serial_number	string	
shelf	shelf	Shelf
state	string	State
stats	stats	
storage_pool	storage_pool	Shared Storage Pool
type	string	Disk interface type
uid	string	The unique identifier for a disk
usable_size	integer	
vendor	string	

Name	Type	Description
virtual	virtual	Information about backing storage for disks on cloud platforms.

Example request


```
{
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "bay": 1,
  "bytes_per_sector": 520,
  "class": "solid_state",
  "compliance_standard": "FIPS 140-2",
  "container_type": "spare",
  "control_standard": "TCG Enterprise",
  "dr_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "effective_type": "vmdisk",
  "encryption_operation": "string",
  "error": [
    {
      "type": "notallflashdisk"
    }
  ],
  "firmware_version": "NA51",
  "home_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "key_id": {
    "data": "string",
    "fips": "string"
  },
  "location": "node-01",
  "model": "X421_HCOBE450A10",
  "name": "1.0.1",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "overall_security": "Level 2",
  "paths": [
    {
      "disk_path_name": "vsim4:3a.10",
```

```
      "initiator": "3a",
      "node.name": "vsim4",
      "node.uuid": "cf7fe057-526d-11ec-af4e-0050568e9df0",
      "port_name": "A",
      "port_type": "sas",
      "vmdisk_hypervisor_file_name": "xvds vol0a0567ae156ca59f6",
      "wwnn": "5000c2971c1b2b8c",
      "wwpn": "5000c2971c1b2b8d"
    }
  ],
  "physical_size": 228930,
  "pool": "pool0",
  "protection_mode": "data",
  "rated_life_used_percent": 10,
  "right_size_sector_count": 1172123568,
  "rpm": 15000,
  "sector_count": 1172123568,
  "serial_number": "KHG2VX8R",
  "shelf": {
    "uid": "7777841915827391056"
  },
  "state": "present",
  "stats": {
    "average_latency": 3,
    "iops_total": 12854,
    "path_error_count": 0,
    "power_on_hours": 21016,
    "throughput": 1957888
  },
  "storage_pool": {
    "name": "storage_pool_1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "type": "ssd",
  "uid":
"002538E5:71B00B2F:00000000:00000000:00000000:00000000:00000000:0000000
0:00000000:00000000",
  "usable_size": 959934889984,
  "vendor": "NETAPP",
  "virtual": {
    "container": "nviet12122018113936-rg",
    "object": "f1fu63se",
    "storage_account": "nviet12122018113936ps",
    "target_address": "string"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
720951	Unable to unfail the disk.
720968	Quiet mode is applicable only when disk unfail is sparing the drive.
721029	Failed to assign disks to a pool.
721066	Node is outside the list of controllers for disk.
721084	An invalid pool name was specified.
721085	The node name was not specified.
721093	Operation not supported on this platform.
721095	Failed to sanitize the spare disk (non-cryptographically).
721096	Invalid disk state. This state is not supported for a PATCH operation.
1441795	Setting the data key ID to the manufacture secure ID is not allowed when in FIPS-compliance mode.
1441825	The system does not support maintenance of the controls of encrypting disks.
14155777	The operation failed on one or more disks.
14155778	No self-encrypting disks were specified.
14155779	Status from a node shows that a conflicting operation has occurred. Some disk controls might have changed.
14155780	Could not retrieve the required key ID from the key manager.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

dr_node

Name	Type	Description
name	string	
uuid	string	

drawer

Name	Type	Description
id	integer	
slot	integer	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

The message and code detailing the error state of this disk.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message

disk_error_info

Name	Type	Description
type	string	Disk error type.

home_node

Name	Type	Description
name	string	
uuid	string	

key_id

Name	Type	Description
data	string	Key ID of the data authentication key
fips	string	Key ID of the FIPS authentication key

node

Name	Type	Description
name	string	
uuid	string	

error

This error message and code explaining the disk failure.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

outage

Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.

Name	Type	Description
persistently_failed	boolean	Indicates whether RAID maintains the state of this disk as failed across reboots.

disk_path_info

Name	Type	Description
disk_path_name	string	Path-based disk name.
initiator	string	Initiator port.
node.name	string	Controller with the initiator port for this path.
node.uuid	string	Controller UUID, to identify node for this path.
port_name	string	Name of the disk port.
port_type	string	Disk port type.
vmdisk_hypervisor_file_name	string	Virtual disk hypervisor file name.
wwnn	string	Target device's World Wide Node Name.
wwpn	string	Target device's World Wide Port Name.

shelf

Shelf

Name	Type	Description
uid	string	

stats

Name	Type	Description
average_latency	integer	Average I/O latency across all active paths, in milliseconds.

Name	Type	Description
iops_total	integer	Total I/O operations per second read and written to this disk across all active paths.
path_error_count	integer	Disk path error count; failed I/O operations.
power_on_hours	integer	Hours powered on.
throughput	integer	Total disk throughput per second across all active paths, in bytes.

storage_pool

Shared Storage Pool

Name	Type	Description
name	string	
uuid	string	

virtual

Information about backing storage for disks on cloud platforms.

Name	Type	Description
container	string	Container name of the virtual disk.
object	string	Object name of the virtual disk.
storage_account	string	Storage account name of the virtual disk.
target_address	string	Target address of the virtual disk.

disk

Name	Type	Description
aggregates	array[aggregates]	List of aggregates sharing this disk
bay	integer	Disk shelf bay

Name	Type	Description
bytes_per_sector	integer	Bytes per sector.
class	string	Disk class
compliance_standard	string	Security standard that the device is certified to.
container_type	string	Type of overlying disk container
control_standard	string	Standard that the device supports for encryption control.
dr_node	dr_node	
drawer	drawer	
effective_type	string	Effective Disk type
encryption_operation	string	This field should only be set as a query parameter in a PATCH operation. It is input only and won't be returned by a subsequent GET.
error	array[disk_error_info]	List of disk errors information.
fips_certified	boolean	
firmware_version	string	
home_node	home_node	
key_id	key_id	
local	boolean	Indicates if a disk is locally attached versus being remotely attached. A locally attached disk resides in the same proximity as the host cluster versus been attached to the remote cluster.
location	string	Physical location of the disk
model	string	
name	string	Cluster-wide disk name
node	node	

Name	Type	Description
outage	outage	Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.
overall_security	string	Overall Security rating, for FIPS-certified devices.
paths	array[disk_path_info]	List of paths to a disk
physical_size	integer	Physical size, in units of bytes
pool	string	Pool to which disk is assigned
protection_mode	string	Mode of drive data protection and FIPS compliance. Possible values are: • *open* - Data is unprotected • *data* - Data protection only, without FIPS compliance • *part* - Data is unprotected; other FIPS compliance settings present • *full* - Full data and FIPS compliance protection • *miss* - Protection mode information is not available
rated_life_used_percent	integer	Percentage of rated life used
right_size_sector_count	integer	Number of usable disk sectors that remain after subtracting the right-size adjustment for this disk.
rpm	integer	Revolutions per minute
sanitize_spare	boolean	Confirms spare disk sanitization (non-cryptographically).
sector_count	integer	Number of sectors on the disk.
self_encrypting	boolean	
serial_number	string	
shelf	shelf	Shelf

Name	Type	Description
state	string	State
stats	stats	
storage_pool	storage_pool	Shared Storage Pool
type	string	Disk interface type
uid	string	The unique identifier for a disk
usable_size	integer	
vendor	string	
virtual	virtual	Information about backing storage for disks on cloud platforms.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific disk

GET `/storage/disks/{name}`

Introduced In: 9.6

Retrieves a specific disk.

Related ONTAP commands

- `storage disk show`
- `storage encryption disk show`

Learn more

- DOC /storage/disks

Parameters

Name	Type	In	Required	Description
name	string	path	True	Disk name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
aggregates	array[aggregates]	List of aggregates sharing this disk
bay	integer	Disk shelf bay
bytes_per_sector	integer	Bytes per sector.
class	string	Disk class
compliance_standard	string	Security standard that the device is certified to.
container_type	string	Type of overlying disk container
control_standard	string	Standard that the device supports for encryption control.
dr_node	dr_node	
drawer	drawer	
effective_type	string	Effective Disk type
encryption_operation	string	This field should only be set as a query parameter in a PATCH operation. It is input only and won't be returned by a subsequent GET.
error	array[disk_error_info]	List of disk errors information.
fips_certified	boolean	
firmware_version	string	
home_node	home_node	

Name	Type	Description
key_id	key_id	
local	boolean	Indicates if a disk is locally attached versus being remotely attached. A locally attached disk resides in the same proximity as the host cluster versus been attached to the remote cluster.
location	string	Physical location of the disk
model	string	
name	string	Cluster-wide disk name
node	node	
outage	outage	Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.
overall_security	string	Overall Security rating, for FIPS-certified devices.
paths	array[disk_path_info]	List of paths to a disk
physical_size	integer	Physical size, in units of bytes
pool	string	Pool to which disk is assigned
protection_mode	string	Mode of drive data protection and FIPS compliance. Possible values are: • *open* - Data is unprotected • *data* - Data protection only, without FIPS compliance • *part* - Data is unprotected; other FIPS compliance settings present • *full* - Full data and FIPS compliance protection • *miss* - Protection mode information is not available
rated_life_used_percent	integer	Percentage of rated life used

Name	Type	Description
right_size_sector_count	integer	Number of usable disk sectors that remain after subtracting the right-size adjustment for this disk.
rpm	integer	Revolutions per minute
sanitize_spare	boolean	Confirms spare disk sanitization (non-cryptographically).
sector_count	integer	Number of sectors on the disk.
self_encrypting	boolean	
serial_number	string	
shelf	shelf	Shelf
state	string	State
stats	stats	
storage_pool	storage_pool	Shared Storage Pool
type	string	Disk interface type
uid	string	The unique identifier for a disk
usable_size	integer	
vendor	string	
virtual	virtual	Information about backing storage for disks on cloud platforms.

Example response


```
{
  "aggregates": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "bay": 1,
  "bytes_per_sector": 520,
  "class": "solid_state",
  "compliance_standard": "FIPS 140-2",
  "container_type": "spare",
  "control_standard": "TCG Enterprise",
  "dr_node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "effective_type": "vmdisk",
  "encryption_operation": "string",
  "error": [
    {
      "reason": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "type": "notallflashdisk"
    }
  ],
  "firmware_version": "NA51",
  "home_node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
```

```
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "key_id": {
    "data": "string",
    "fips": "string"
  },
  "location": "node-01",
  "model": "X421_HCOBE450A10",
  "name": "1.0.1",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "outage": {
    "reason": {
      "arguments": [
        {
          "code": "string",
          "message": "string"
        }
      ],
      "code": "4",
      "message": "entry doesn't exist"
    }
  },
  "overall_security": "Level 2",
  "paths": [
    {
      "disk_path_name": "vsim4:3a.10",
      "initiator": "3a",
      "node.name": "vsim4",
      "node.uuid": "cf7fe057-526d-11ec-af4e-0050568e9df0",
      "port_name": "A",
      "port_type": "sas",
      "vmdisk_hypervisor_file_name": "xvds vol0a0567ae156ca59f6",
      "wwnn": "5000c2971c1b2b8c",
      "wwpn": "5000c2971c1b2b8d"
    }
```

```
  ],
  "physical_size": 228930,
  "pool": "pool0",
  "protection_mode": "data",
  "rated_life_used_percent": 10,
  "right_size_sector_count": 1172123568,
  "rpm": 15000,
  "sector_count": 1172123568,
  "serial_number": "KHG2VX8R",
  "shelf": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uid": "7777841915827391056"
  },
  "state": "present",
  "stats": {
    "average_latency": 3,
    "iops_total": 12854,
    "path_error_count": 0,
    "power_on_hours": 21016,
    "throughput": 1957888
  },
  "storage_pool": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "storage_pool_1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "type": "ssd",
  "uid":
"002538E5:71B00B2F:00000000:00000000:00000000:00000000:00000000:0000000
0:00000000:00000000",
  "usable_size": 959934889984,
  "vendor": "NETAPP",
  "virtual": {
    "container": "nviet12122018113936-rg",
    "object": "f1fu63se",
    "storage_account": "nviet12122018113936ps",
    "target_address": "string"
  }
```

```
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

dr_node

Name	Type	Description
name	string	
uuid	string	

drawer

Name	Type	Description
id	integer	
slot	integer	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

The message and code detailing the error state of this disk.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

disk_error_info

Name	Type	Description
reason	error	The message and code detailing the error state of this disk.
type	string	Disk error type.

home_node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

key_id

Name	Type	Description
data	string	Key ID of the data authentication key
fips	string	Key ID of the FIPS authentication key

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error

This error message and code explaining the disk failure.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

outage

Indicates if a disk has an entry in the failed disk registry, along with the reason for the failure.

Name	Type	Description
persistently_failed	boolean	Indicates whether RAID maintains the state of this disk as failed across reboots.
reason	error	This error message and code explaining the disk failure.

disk_path_info

Name	Type	Description
disk_path_name	string	Path-based disk name.
initiator	string	Initiator port.
node.name	string	Controller with the initiator port for this path.
node.uuid	string	Controller UUID, to identify node for this path.
port_name	string	Name of the disk port.
port_type	string	Disk port type.
vmdisk_hypervisor_file_name	string	Virtual disk hypervisor file name.
wwnn	string	Target device's World Wide Node Name.
wwpn	string	Target device's World Wide Port Name.

shelf

Shelf

Name	Type	Description
_links	_links	
uid	string	

stats

Name	Type	Description
average_latency	integer	Average I/O latency across all active paths, in milliseconds.
iops_total	integer	Total I/O operations per second read and written to this disk across all active paths.
path_error_count	integer	Disk path error count; failed I/O operations.
power_on_hours	integer	Hours powered on.
throughput	integer	Total disk throughput per second across all active paths, in bytes.

storage_pool

Shared Storage Pool

Name	Type	Description
_links	_links	
name	string	
uuid	string	

virtual

Information about backing storage for disks on cloud platforms.

Name	Type	Description
container	string	Container name of the virtual disk.
object	string	Object name of the virtual disk.
storage_account	string	Storage account name of the virtual disk.

Name	Type	Description
target_address	string	Target address of the virtual disk.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage file clones

Storage file clone endpoint overview

Overview

You can use these API's to create file clones, retrieve split status and manage split loads. These endpoints are used for cloning files within a volume, without taking much of extra space. Child and parent clones shares the unchanged blocks of data. REST support for sis clone creation for Flex Group volumes is blocked.

A file clone split operation detach child clone from its parent. Split operations use space. To ensure that file clone create operation is not affected by split, file clone tokens are use to reserve space. API endpoints can be used to update the validity and space reserved by token.

File clone APIs

The following APIs are used to perform the following operations:

– POST /api/storage/file/clone

– GET /api/storage/file/clone/split-status

– PATCH /api/storage/file/clone/split-loads/{node.uuid}

– GET /api/storage/file/clone/split-loads/{node.uuid}

– GET /api/storage/file/clone/split-loads

– GET /api/storage/file/clone/tokens/

– DELETE /api/storage/file/clone/tokens/{node.uuid}/{token.uuid}

– PATCH /api/storage/file/clone/tokens/{node.uuid}/{token.uuid}

Create a clone of the file

POST `/storage/file/clone`

Introduced In: 9.6

Creates a clone of the file.

Required Properties

- `source_path`
- `destination_path`
- `volume.uuid` - Instance UUID of the volume in which to create clone.

Optional Properties

- `range` - Required only in the case of a sub file clone.
- `autodelete` - Marks a cloned file for auto deletion.
- `is_backup` - Cloned file is used as a backup.
- `volume.name` - Name of the volume in which to create the clone.
- `token_uuid` - UUID of existing clone token.

Related Ontap commands

- `volume file clone create`

Creating file clones

The POST operation is used to create file clones with the specified attributes in the body. Set the `volume.uuid` to identify the volume.
Set `source_path` and `destination_path` to identify the file path of the original and copied file. For a full file clone, the new file is created using `destination_path`.
For a sub file clone, set `range` in the format source-file-block-number:destination-file-block-number:block-count. The API returns an error for the following overlapping conditions: (a) if the source and destination files are the same and if any of the source ranges overlap with any of the destination ranges. (b) if any of the source ranges overlap amongst themselves. (c) if any of the destination ranges overlap amongst themselves. If not provided, full file cloning is assumed.

If set to `autodelete`, the cloned file is deleted when the volumes are full.

```
# The API:
curl -X POST "https://<mgmt_ip>/api/storage/file/clone" -H "accept:
application/hal+json" -d '{"volume": {"name": "vol1",  "uuid": "40e0fdc5-
c28f-11eb-8270-005056bbeb0b"}, "source_path": "f1", "destination_path":
"f2_c1"}'

# The response:
{
"job": {
  "uuid": "0d025fd9-c4dc-11eb-adb5-005056bbeb0b",
  "_links": {
     "self": {
       "href": "/api/cluster/jobs/0d025fd9-c4dc-11eb-adb5-005056bbeb0b"
     }
  }
}
}
```

Learn More

- [DOC /storage/file/clone]

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
autodelete	boolean	Mark clone file for auto deletion.
destination_path	string	Relative path of the clone/destination file in the volume.

Name	Type	Description
is_backup	boolean	Mark clone file for backup.
overwrite_destination	boolean	Destination file gets overwritten.
range	array[string]	List of block ranges for sub-file cloning in the format "source-file-block-number:destination-file-block-number:block-count"
source_path	string	Relative path of the source file in the volume.
token_uuid	string	UUID of existing clone token with reserved split load.
volume	volume	

Example request

```
{
  "destination_path": "dest_file1 or dir1/dest_file2",
  "is_backup": "",
  "range": [
    2
  ],
  "source_path": "src_file1 or dir1/src_file2 or
./.snapshot/snap1/src_file3",
  "token_uuid": "string",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917812	A relative path must be used for `destination_path` when a volume is specified.
917864	Failed to get the file handle.
917898	Invalid `value` for the field -range. Value must be provided in the format <source start block>:<destination start block>:<block length>.
918236	The specified `volume.uuid` and `volume.name` refer to different volumes.
13565952	Clone start failed.
13565988	The destination file cannot be marked as a backup clone as only a full-file clone can be a backup clone.
13565998	File clone using autodelete is not supported on a FlexGroup volume. Try the operation again without specifying the "autodelete" parameter.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_clone

File clone

Name	Type	Description
autodelete	boolean	Mark clone file for auto deletion.
destination_path	string	Relative path of the clone/destination file in the volume.
is_backup	boolean	Mark clone file for backup.
overwrite_destination	boolean	Destination file gets overwritten.
range	array[string]	List of block ranges for sub-file cloning in the format "source-file-block-number:destination-file-block-number:block-count"

Name	Type	Description
source_path	string	Relative path of the source file in the volume.
token_uuid	string	UUID of existing clone token with reserved split load.
volume	volume	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the clone split load of a node

GET `/storage/file/clone/split-loads`

Introduced In: 9.10

Retrieves the clone split load of a node.

Related Ontap Commands

- `volume file clone split load show`

Retrieving file clone split load related information

The GET operation can be used to retrieve information about clone split load data. Split load data is the data currently undergoing the split. There is a limit on split load data. This API communicates how much data is undergoing split and how much can still be processed.

```
# The API:
/api/storage/file/clone/split-loads

# The call:
curl -X GET "https://<mgmt_ip>/api/storage/file/clone/split-loads" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "158d592f-a829-11eb-a47b-005056bb46d7",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/158d592f-a829-11eb-a47b-
005056bb46d7"
        }
      }
    },
    "load": {
      "maximum": 35184372088832,
      "current": 0,
      "token_reserved": 0,
      "allowable": 35184372088832
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/clone/split-loads/158d592f-a829-11eb-
a47b-005056bb46d7"
      }
    }
  },
  {
    "node": {
      "uuid": "9686b8d1-a828-11eb-80d8-005056bbe7b6",
```

```
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/9686b8d1-a828-11eb-80d8-
005056bbe7b6"
        }
      }
    },
    "load": {
      "maximum": 35184372088832,
      "current": 0,
      "token_reserved": 0,
      "allowable": 35184372088832
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/clone/split-loads/9686b8d1-a828-11eb-
80d8-005056bbe7b6"
      }
    }
  }
],
"num_records": 2,
"_links":
  "self": {
    "href": "/api/storage/file/clone/split-loads"
  }
}
}
```


Learn More

- [DOC /storage/file/clone]

Parameters

Name	Type	In	Required	Description
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
load.allowable	integer	query	False	Filter by load.allowable

Name	Type	In	Required	Description
load.maximum	integer	query	False	Filter by load.maximum
load.token_reserved	integer	query	False	Filter by load.token_reserved
load.current	integer	query	False	Filter by load.current
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[split_load]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "load": {
        "allowable": "4KB",
        "current": 0,
        "maximum": "4KB",
        "token_reserved": 0
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

load

Name	Type	Description
allowable	integer	Specifies the available file clone split load on the node.
current	integer	Specifies the current on-going file clone split load on the node.
maximum	integer	Specifies the maximum allowable file clone split load on the node at any point in time. The least allowable file clone split load is 4KB and the maximum is 675TB. The default value is 4KB for the maximum split load when unit is not specified. The default file clone split load is set based on the system configuration.
token_reserved	integer	Specifies the file clone split load on the node reserved for tokens.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

split_load

Name	Type	Description
_links	self_link	
load	load	
node	node	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the volume file clone split load

GET `/storage/file/clone/split-loads/{node.uuid}`

Introduced In: 9.10

Retrieve the volume file clone split load.

Related ONTAP command

- `volume file clone split load show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
load	load	
node	node	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "load": {
    "allowable": "4KB",
    "current": 0,
    "maximum": "4KB",
    "token_reserved": 0
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

load

Name	Type	Description
allowable	integer	Specifies the available file clone split load on the node.
current	integer	Specifies the current on-going file clone split load on the node.
maximum	integer	Specifies the maximum allowable file clone split load on the node at any point in time. The least allowable file clone split load is 4KB and the maximum is 675TB. The default value is 4KB for the maximum split load when unit is not specified. The default file clone split load is set based on the system configuration.
token_reserved	integer	Specifies the file clone split load on the node reserved for tokens.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the maximum split load

PATCH `/storage/file/clone/split-loads/{node.uuid}`

Introduced In: 9.10

Updates the maximum split load.

Related Ontap command

- `volume file clone split load modify`

Learn More

- [`DOC /storage/file/clone`]

```
# The call:
curl -X PATCH "https://<mgmt_IP>/api/storage/file/clone/split-
loads/9686b8d1-a828-11eb-80d8-005056bbe7b6" -d '{"load": {"maximum":
"16TB" } }'

# The response to successful patch is empty body
```

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID

Request Body

Name	Type	Description
load	load	
node	node	

Example request

```
{
  "load": {
    "allowable": "4KB",
    "current": 0,
    "maximum": "4KB",
    "token_reserved": 0
  },
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13565966	Failed to modify the maximum split load on the node due to an invalid field value.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

self_link

load

Name	Type	Description
allowable	integer	Specifies the available file clone split load on the node.
current	integer	Specifies the current on-going file clone split load on the node.
maximum	integer	Specifies the maximum allowable file clone split load on the node at any point in time. The least allowable file clone split load is 4KB and the maximum is 675TB. The default value is 4KB for the maximum split load when unit is not specified. The default file clone split load is set based on the system configuration.
token_reserved	integer	Specifies the file clone split load on the node reserved for tokens.

_links

node

Name	Type	Description
name	string	
uuid	string	

split_load

Name	Type	Description
load	load	
node	node	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve file clone split status of all volumes in the node

GET `/storage/file/clone/split-status`

Introduced In: 9.10

Retrieves file clone split status of all volumes in the node.

Learn More

- [DOC `/storage/file/clone`]

```
# The API:
/api/storage/file/clone/split-status

# The call:
curl -X GET "https://<mgmt_ip>/api/storage/file/clone/split-status" -H
"accept: application/hal+json"

# The response:
{
"records": [
  {
    "volume": {
      "uuid": "ac559964-57a3-40cf-b5cb-f3cb99151a7d",
      "name": "vol1",
      "_links": {
```

```
        "self": {
          "href": "/api/storage/volumes/ac559964-57a3-40cf-b5cb-
f3cb99151a7d"
        }
      }
    },
    "svm": {
      "uuid": "9fcb44bf-4305-11e8-b8d5-00a09887594b",
      "name": "vs1"
      "_links": {
        "self": {
          "href": "/api/svm/svms/9fcb44bf-4305-11e8-b8d5-00a09887594b"
        }
      }
    },
    "pending_splits": 0,
    "unsplit_size": 0,
    "_links": {
      "self": {
        "href": "/api/storage/file/clone/split-status/ac559964-57a3-40cf-
b5cb-f3cb99151a7d"
      }
    }
  },
  {
    "volume": {
      "uuid": "32d95d48-d8b7-11eb-a41d-005056bb3837",
      "name": "vs1_root",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/32d95d48-d8b7-11eb-a41d-
005056bb3837"
        }
      }
    },
    "svm": {
      "name": "vs1"
      "_links": {
        "self": {
          "href": "/api/svm/svms/9fcb44bf-4305-11e8-b8d5-00a09887594b"
        }
      }
    },
    "pending_splits": 0,
    "unsplit_size": 0,
    "_links": {
```

```
      "self": {
        "href": "/api/storage/file/clone/split-status/32d95d48-d8b7-11eb-
a41d-005056bb3837"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/storage/file/clone/split-status"
  }
}
}
```


Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
unsplit_size	integer	query	False	Filter by unsplit_size • Introduced in: 9.15
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
pending_splits	integer	query	False	Filter by pending_splits
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[split_status]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "pending_splits": 0,
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "unsplit_size": 0,
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

split_status

Name	Type	Description
_links	self_link	
pending_splits	integer	Specifies the number of pending file clone split operations in the volume.
svm	svm	SVM, applies only to SVM-scoped objects.
unsplit_size	integer	Specifies the space occupied by unsplit file clones in the volume.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve file clone split status of all volumes

GET `/storage/file/clone/split-status/{volume.uuid}`

Introduced In: 9.10

Retrieves file clone split status of all volumes in the node.

Related Ontap commands

- `volume file clone split status`

Learn More

- [`DOC /storage/file/clone`]

Retrieves the information of split status.

The GET operation retrieves information about split processes in the volume.
`pending-clone-splits` is the number of files for which file clone split is not yet completed.
`unsplit-size` is the sum of all sizes in the volume that is not split, in bytes.

```
# The API:
/api/storage/file/clone/split-status/{volume.uuid}

# The call:
curl -X GET "https://<mgmt_ip>/api/storage/file/clone/split-
status/ac559964-57a3-40cf-b5cb-f3cb99151a7d" -H "accept:
application/hal+json"

# The response:
{
"volume": {
  "uuid": "ac559964-57a3-40cf-b5cb-f3cb99151a7d",
  "name": "vol1",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/ac559964-57a3-40cf-b5cb-f3cb99151a7d"
    }
  }
},
"svm": {
  "name": "vs1"
},
"pending_splits": 0,
"unsplit_size": 0,
"_links": {
  "self": {
    "href": "/api/storage/file/clone/split-status/ac559964-57a3-40cf-b5cb-
f3cb99151a7d"
  }
}
}
```

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume Instance UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
pending_splits	integer	Specifies the number of pending file clone split operations in the volume.
svm	svm	SVM, applies only to SVM-scoped objects.
unsplit_size	integer	Specifies the space occupied by unsplit file clones in the volume.
volume	volume	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "pending_splits": 0,
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unsplit_size": 0,
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve information for a token

GET `/storage/file/clone/tokens`

Introduced In: 9.10

Retrieves information for the specified token.

Related Ontap command

- `volume file clone token show`

Learn More

- [`DOC /storage/file/clone`]

Retrieving information on clone tokens

```
# The API:
/api/storage/file/clone/tokens

# The call:
curl -X GET "https://<mgmt_ip>/api/storage/file/clone/tokens" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "97255711-a1ad-11eb-92b2-0050568eb2ca",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/97255711-a1ad-11eb-92b2-
0050568eb2ca"
        }
      }
    },
    "uuid": "905c42ce-a74b-11eb-bd86-0050568ec7ae",
    "reserve_size": 10240,
    "expiry_time": {
      "limit": "PT1H10M",
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/clone/tokens/97255711-a1ad-11eb-92b2-
0050568eb2ca/905c42ce-a74b-11eb-bd86-0050568ec7ae"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/file/clone/tokens"
  }
}
}
```

Parameters

Name	Type	In	Required	Description
reserve_size	integer	query	False	Filter by reserve_size
node.name	string	query	False	Filter by node.name
node.uuid	string	query	False	Filter by node.uuid
expiry_time.left	string	query	False	Filter by expiry_time.left
expiry_time.limit	string	query	False	Filter by expiry_time.limit
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of records.
records	array[token]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {}
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

expiry_time

Name	Type	Description
left	string	Specifies the time remaining before the given token expires in ISO-8601 format.
limit	string	Specifies when the given token expires in ISO-8601 format.

node

Name	Type	Description
name	string	Node name
uuid	string	Node UUID

token

token

Name	Type	Description
_links	self_link	
expiry_time	expiry_time	
node	node	

Name	Type	Description
reserve_size	integer	Specifies the available reserve in the file clone split load for the given token. Also note that the minimum value for reserve size is 4KB and any value specified below 4KB will be rounded off to 4KB.
uuid	string	Token UUID.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new token to reserve the split load

POST `/storage/file/clone/tokens`

Introduced In: 9.10

Creates a new token to reserve the split load.

Required Properties

- `node.uuid`
- `reserve-size`

Optional Properties

- `expiry_time.limit`

Default values

- `expiry_time.limit` - "60"

Related ONTAP Commands

- `volume file clone token create`

Learn More

- [`DOC /storage/file/clone`]

Creating clone tokens to reserve space for clone creation on the node

There is a limit on the amount of clone data that can undergo a split at a point of time on the node (clone split load). Clone tokens are used to reserve space from clone split load for clone creation. The POST operation is used to create clone tokens with `reserve-size` and `expiry-time.limit` in the body.

```
# The API
/api/storage/file/clone/tokens

# The call
curl -X POST "https://<mgmt_ip>/api/storage/file/clone/tokens" -H "accept:
application/hal+json" -d '{"node": {"uuid": "97255711-a1ad-11eb-92b2-
0050568eb2ca"}, "reserve_size": "40M", "expiry_time": { "limit": "4200"}
}'

# The response
{
"num_records": 1,
"records": [
  {
    "node": {
      "uuid": "97255711-a1ad-11eb-92b2-0050568eb2ca",
      "name": "node1"
    },
    "uuid": "286f6ae4-c94d-11eb-adb5-005056bbeb0b",
    "reserve_size": 41943040,
    "expiry_time": {
      "limit": "PT1H10M"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/clone/tokens/97255711-a1ad-11eb-92b2-
0050568eb2ca"
      }
    }
  }
]
}
```

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
expiry_time	expiry_time	
node	node	
reserve_size	integer	Specifies the available reserve in the file clone split load for the given token. Also note that the minimum value for reserve size is 4KB and any value specified below 4KB will be rounded off to 4KB.
uuid	string	Token UUID.

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[token]	

Example response

```
{
  "num_records": 1,
  "records": [
    {}
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13565959	Failed to create token for node `node.name`.
13565964	Reserve size cannot be negative.
13565997	The node.uuid doesn't exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

expiry_time

Name	Type	Description
left	string	Specifies the time remaining before the given token expires in ISO-8601 format.
limit	string	Specifies when the given token expires in ISO-8601 format.

node

Name	Type	Description
name	string	Node name
uuid	string	Node UUID

token

token

Name	Type	Description
expiry_time	expiry_time	
node	node	
reserve_size	integer	Specifies the available reserve in the file clone split load for the given token. Also note that the minimum value for reserve size is 4KB and any value specified below 4KB will be rounded off to 4KB.
uuid	string	Token UUID.

collection_links

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a specific file clone token

DELETE `/storage/file/clone/tokens/{node.uuid}/{uuid}`

Introduced In: 9.10

Deletes a specific file clone token.

Related Ontap command

- `volume file clone token delete`

Delete specific clone token.

```
# The API:
/api/storage/file/clone/tokens/{node.uuid}/{token.uuid}

# The call:
curl -X DELETE "https://<mgmt_ip>/api/storage/file/clone/tokens/97255711-
a1ad-11eb-92b2-0050568eb2ca/909c42ce-a74b-11eb-bd86-0050568ec7ae"

# The successful response is empty body.
```

Learn More

- [DOC /storage/file/clone]

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
uuid	string	path	True	Token UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13565958	Failed to get information about token `uuid` for node `node.name`.
13565961	Failed to delete token for node `node.name`.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a file clone token

GET `/storage/file/clone/tokens/{node.uuid}/{uuid}`

Introduced In: 9.10

Retrieves a file clone token

Related Ontap command

- `volume file clone token show`

Retrieve information for single token.

```
# The call:
curl -X GET "https://<mgmt_ip>/api/storage/file/clone/tokens/97255711-
a1ad-11eb-92b2-0050568eb2ca/905c42ce-a74b-11eb-bd86-0050568ec7ae"

# The response:
{
"node": {
  "uuid": "97255711-a1ad-11eb-92b2-0050568eb2ca",
  "name": "node1",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/97255711-a1ad-11eb-92b2-0050568eb2ca"
    }
  }
},
"uuid": "905c42ce-a74b-11eb-bd86-0050568ec7ae",
"reserve_size": 41943040,
"expiry_time": {
  "limit": "PT1H10M",
},
"_links": {
  "self": {
    "href": "/api/storage/file/clone/tokens/97255711-a1ad-11eb-92b2-
0050568eb2ca/905c42ce-a74b-11eb-bd86-0050568ec7ae"
  }
}
}
```

Learn More

- [`DOC /storage/file/clone`]

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID

Name	Type	In	Required	Description
uuid	string	path	True	Token UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
expiry_time	expiry_time	
node	node	
reserve_size	integer	Specifies the available reserve in the file clone split load for the given token. Also note that the minimum value for reserve size is 4KB and any value specified below 4KB will be rounded off to 4KB.
uuid	string	Token UUID.

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13565958	Failed to get information about token `uuid` for node `node.name`.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

expiry_time

Name	Type	Description
left	string	Specifies the time remaining before the given token expires in ISO-8601 format.
limit	string	Specifies when the given token expires in ISO-8601 format.

node

Name	Type	Description
name	string	Node name
uuid	string	Node UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update a file clone token

PATCH `/storage/file/clone/tokens/{node.uuid}/{uuid}`

Introduced In: 9.10

Updates a file clone token.

Related Ontap commands

- `volume file clone token modify`

Modify clone token

Use the PATCH API to update the expiry time associated with the clone token.

```
# The call:
curl -X PATCH "https://<mgmt_ip>/api/storage/file/clone/tokens/97255711-
a1ad-11eb-92b2-0050568eb2ca/905c42ce-a74b-11eb-bd86-0050568ec7ae" -d
'{"expiry_time": {"limit": "5400"} }'

# The response for successful PATCH is empty.
```

Learn More

- [DOC `/storage/file/clone`]

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
uuid	string	path	True	Token UUID

Request Body

Name	Type	Description
expiry_time	expiry_time	

Name	Type	Description
uuid	string	Token UUID.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
13565958	Failed to get information about token `uuid` for node `node.name`.
13565960	Failed to modify token expiry limit for node `node.name`.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

expiry_time

Name	Type	Description
left	string	Specifies the time remaining before the given token expires in ISO-8601 format.
limit	string	Specifies when the given token expires in ISO-8601 format.

node

Name	Type	Description
name	string	Node name
uuid	string	Node UUID

token

token

Name	Type	Description
expiry_time	expiry_time	
uuid	string	Token UUID.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Start a file copy operation

POST `/storage/file/copy`

Introduced In: 9.8

Starts a file copy operation. Only supported on flexible volumes.

Required properties

- `files_to_copy` - List of files with the destination they are to be copied to.

Default property values

- `cutover_time` - *10*
- `hold_quiescence` - *false*
- `max_throughput` - *0*
- `reference_cutover_time` - *10*

Related ONTAP commands

- `volume file copy start`

Examples

Copying two files

The POST request is used to copy file(s).

```
# The API:
/api/storage/file/copy

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/copy" -H "accept:
application/hal+json" -d
'{"files_to_copy":[{"source":{"volume":{"name":"vol_a"},"svm":{"name":"vs0
"},"path":"d1/src_f1"},"destination":{"volume":{"name":"vol_a"},"svm":{"na
me":"vs0"},"path":"d1/dst_f1"}},
{"source":{"volume":{"name":"vol_a"},"svm":{"name":"vs0"},"path":"d1/src_f
2"},"destination":{"volume":{"name":"vol_a"},"svm":{"name":"vs0"},"path":"
d1/dst_f2"}}]}'

# The response:
{
"job": {
  "uuid": "b89bc5dd-94a3-11e8-a7a3-0050568edf84",
  "_links": {
     "self": {
       "href": "/api/cluster/jobs/b89bc5dd-94a3-11e8-a7a3-0050568edf84"
     }
    }
 }
}
```

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
cutover_time	integer	The maximum amount of time (in seconds) that the source can be quiesced before a destination file must be made available for read-write traffic.

Name	Type	Description
files_to_copy	array[files_to_copy]	A list of source files along with the destinations they are copied to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory.
hold_quiescence	boolean	Specifies whether the source file should be held quiescent for the duration of the copy operation.
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1MB/s is set to 1MB/s. A non-zero value greater than 1MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.
reference_cutover_time	integer	The maximum amount of time (in seconds) that the source reference file can be quiesced before the corresponding destination file must be made available for read-write traffic.
reference_path	string	The source reference file. If a reference file is specified, data for other files being copied will be transferred as a difference from the reference file. This can save bandwidth and destination storage if the specified source files share blocks. If provided, this input must match one of the source file paths. This input need not be provided if only one source file is specified.

Example request

```
{
  "cutover_time": 10,
  "files_to_copy": [
    {
      "destination": {
        "path": "string",
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "source": {
        "path": "string",
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    }
  ],
  "reference_cutover_time": 10,
  "reference_path": "svm1:volume1/file1"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917506	Volume `volume.name` not found.
918236	The specified `volume.uuid` and `volume.name` refer to different volumes.
2621464	Failed to lookup identifier for SVM `svm.name`.
2621706	The specified `svm.uuid` and `svm.name` refer to different SVMs.
7012352	File locations are inconsistent. All files must be on the same volume.
7012353	Exceeded the file operations supported number of files.
7012354	Unable to pair the number of source files to destination files.
7012357	Cannot start a file operation until all cluster nodes support the file operations capability.
7012358	The specified source path is invalid.

Error Code	Description
7012359	The specified destination path is invalid.
7012362	The SVMs are not yet in a peered state yet.
7012363	Cannot copy files. All file operations must be managed by the destination SVM's administrator.
7012365	Copying a file between clusters is not supported.
7012366	Cannot start the operation with an invalid "max-throughput" value.
7012367	A reference path may only be specified if multiple source paths are specified.
7012368	The reference path must have a matching source path.
7012371	The reference cutover time exceeds the maximum allowable time.
7012374	Source volume and destination volume have different home clusters.
7012376	Operation not allowed on a volume that is part of a SnapMirror Synchronous relationship.
7012377	Cannot start a file copy operation on the volume because an active volume conversion is in progress.
7012378	The source volume UUID or name must be provided.
7012380	The source SVM UUID or name must be provided.
7013360	The peering relationship between the two SVMs does not include application "file-copy".
7013361	The SVMs are not in an intracluster peering relationship.
7018866	Cannot start the file operation. The volume is read-only.
7018877	Maximum combined total (50) of file and LUN copy and move operations reached. When one or more of the operations has completed, try the command again.
13107223	Operation not supported for FlexGroup volumes or FlexGroup constituents.
196608143	Cannot start operation. The volume is undergoing a secure purge operation.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_reference

Name	Type	Description
path	string	Path of the file or directory.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

files_to_copy

Name	Type	Description
destination	file_reference	
source	file_reference	

file_copy

File copy

Name	Type	Description
cutover_time	integer	The maximum amount of time (in seconds) that the source can be quiesced before a destination file must be made available for read-write traffic.
files_to_copy	array[files_to_copy]	A list of source files along with the destinations they are copied to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory.
hold_quiescence	boolean	Specifies whether the source file should be held quiescent for the duration of the copy operation.
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1MB/s is set to 1MB/s. A non-zero value greater than 1MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.

Name	Type	Description
reference_cutover_time	integer	The maximum amount of time (in seconds) that the source reference file can be quiesced before the corresponding destination file must be made available for read-write traffic.
reference_path	string	The source reference file. If a reference file is specified, data for other files being copied will be transferred as a difference from the reference file. This can save bandwidth and destination storage if the specified source files share blocks. If provided, this input must match one of the source file paths. This input need not be provided if only one source file is specified.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage storage file moves

Storage file moves endpoint overview

Overview

You can use this API to start a file move operation between two FlexVol volumes or within a FlexGroup volume, and view the status of all on-going file move operations in the cluster.

– GET /api/storage/file/moves

– GET /api/storage/file/moves/{node.uuid}/{uuid}/{index}

– POST /api/storage/file/moves

Examples

Moving two files from one FlexVol volume to the other FlexVol volume

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/moves" -H "accept:
application/hal+json" -d @move_between_fv.txt
move_between_fv.txt:
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f1.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
```

```
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f2.txt"
    }
  ],
  "destinations":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/f1.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/f2.txt"
    }
  ]
}
}

# The response:
{ }
```

Moving two files from one FlexVol volume to the other FlexVol volume (only specifying the destination directory)

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/moves" -H "accept:
application/hal+json" -d @move_between_fv_dir.txt
move_between_fv_dir.txt:
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f3.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f4.txt"
    }
  ],
  "destinations":[
    {
      "svm":{
        "name":"vs0"
       },
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/"
    }
  ]
}
}

# The response:
{ }
```

Moving multiple files from one FlexVol volume to the other FlexVol volume and providing a source reference file

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/moves" -H "accept:
application/hal+json" -d @move_between_fv_source.txt
move_between_fv_source.txt:
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f5.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f6.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv1"
      },
      "path":"dir1/f7.txt"
    }
  ],
  "destinations":[
    {
      "svm":{
        "name":"vs0"
      },
```

```
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/f5.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/f6.txt"
    },
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fv2"
      },
      "path":"dir2/f700.txt"
    }
  ]
},
"reference":{
  "svm":{
    "name":"vs0"
  },
  "volume":{
    "name":"fv1"
  },
  "path":"dir1/f6.txt"
}
}

# The response:
{ }
```


Moving a file between two FlexGroup volume constituents in the same FlexGroup volume

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/moves" -H "accept:
application/hal+json" -d @move_between_fg.txt
move_between_fg.txt:
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fg2"
      },
      "path":"test/file.txt"
    }
  ],
  "destinations":[
    {
      "volume":{
        "name":"fg2__0008"
      }
    }
  ]
}
}

# The response:
{ }
```

Automatically selecting a destination constituent to move a file in a FlexGroup volume for capacity rebalancing

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/file/moves?automatic=true" -H
"accept: application/hal+json" -d @move_between_fg_automatic.txt
move_between_fg_automatic.txt:
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fg2"
      },
      "path":"test/file2.txt"
    }
  ]
}
}

# The response:
{ }
```

Moving a file between two FlexGroup volume constituents in the same FlexGroup volume using the "force" and "disruptive" options

```
# The API:
/api/storage/file/moves

# The call:
curl -X POST  "https://<mgmt-
ip>/api/storage/file/moves?force=true&disruptive=true" -H "accept:
application/hal+json" -d @move_between_fg_force.txt
move_between_fg_force.txt
{
"files_to_move":{
  "sources":[
    {
      "svm":{
        "name":"vs0"
      },
      "volume":{
        "name":"fg2"
      },
      "path":"test/file3.txt"
    }
  ],
  "destinations":[
    {
      "volume":{
        "name":"fg2__0008"
      }
    }
  ]
}
}

# The response:
{ }
```

Retrieving file move operations

```
# The API:
/api/storage/file/moves

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/file/moves" -H 'accept:
application/hal+json'

# The response:
```

```
{
"records": [
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "e12bc78d-36bb-4274-8163-fb8c21d59c9b",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "4e919b6d-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0008"
      },
      "path": "test/file2.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "4d14f2f6-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0005"
      },
      "path": "test/file2.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/e12bc78d-36bb-4274-8163-fb8c21d59c9b/0"
      }
    }
  },
  {
    "node": {
```

```
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "ce2af347-586d-4b31-b728-1e925f51fdfc",
    "index": 1,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f2.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f2.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/ce2af347-586d-4b31-b728-1e925f51fdfc/1"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
```

```
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "ce2af347-586d-4b31-b728-1e925f51fdfc",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f1.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f1.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/ce2af347-586d-4b31-b728-1e925f51fdfc/0"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
```

```
    },
    "uuid": "6d12601b-5377-43bf-99f0-b4bec37565e2",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f3.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f3.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/6d12601b-5377-43bf-99f0-b4bec37565e2/0"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "6d12601b-5377-43bf-99f0-b4bec37565e2",
    "index": 1,
    "source": {
```

```
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f4.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f4.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/6d12601b-5377-43bf-99f0-b4bec37565e2/1"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "bbfdface-0d46-4f5f-9624-72f4869eba81",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
```

```
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f5.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f5.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/bbfdface-0d46-4f5f-9624-72f4869eba81/0"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "bbfdface-0d46-4f5f-9624-72f4869eba81",
    "index": 2,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
```

```
      "path": "dir1/f7.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f700.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/bbfdface-0d46-4f5f-9624-72f4869eba81/2"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "bbfdface-0d46-4f5f-9624-72f4869eba81",
    "index": 1,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f6.txt"
    },
    "destination": {
      "svm": {
```

```
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f6.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/bbfdface-0d46-4f5f-9624-72f4869eba81/1"
      }
    }
  },
  {
    "node": {
      "uuid": "780255d2-10aa-11ec-a308-005056acf86d",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/780255d2-10aa-11ec-a308-
005056acf86d"
        }
      }
    },
    "uuid": "6591a42a-4ea2-4d40-bfb4-38959f6bd68e",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "438731dd-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0001"
      },
      "path": "test/file.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
```

```
        "uuid": "4e919b6d-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0008"
      },
      "path": "/test/file.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/780255d2-10aa-11ec-a308-
005056acf86d/6591a42a-4ea2-4d40-bfb4-38959f6bd68e/0"
      }
    }
  },
  {
    "node": {
      "uuid": "780255d2-10aa-11ec-a308-005056acf86d",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/780255d2-10aa-11ec-a308-
005056acf86d"
        }
      }
    },
    "uuid": "1a94e95a-346e-4eb3-969a-110e275cbf18",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "438731dd-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0001"
      },
      "path": "test/file3.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "4e919b6d-1c76-11ec-8e1b-005056acf2dd",
        "name": "fg2__0008"
      },
      "path": "/test/file3.txt"
```

```
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/780255d2-10aa-11ec-a308-
005056acf86d/1a94e95a-346e-4eb3-969a-110e275cbf18/0"
      }
    }
  }
],
"num_records": 10,
"_links": {
  "self": {
    "href": "/api/storage/file/moves"
  }
}
}
```

Retrieving all moves in a file move operation

```
# The API:
/api/storage/file/moves/{node.uuid}/{uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/file/moves/*/ce2af347-586d-
4b31-b728-1e925f51fdfc/*" -H 'accept: application/hal+json'

# The response:
{
"records": [
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "ce2af347-586d-4b31-b728-1e925f51fdfc",
    "index": 1,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
```

```
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv1"
      },
      "path": "dir1/f2.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f2.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/ce2af347-586d-4b31-b728-1e925f51fdfc/1"
      }
    }
  },
  {
    "node": {
      "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-
005056acf2dd"
        }
      }
    },
    "uuid": "ce2af347-586d-4b31-b728-1e925f51fdfc",
    "index": 0,
    "source": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
```

```
        "name": "fv1"
      },
      "path": "dir1/f1.txt"
    },
    "destination": {
      "svm": {
        "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
        "name": "vs0"
      },
      "volume": {
        "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
        "name": "fv2"
      },
      "path": "dir2/f1.txt"
    },
    "_links": {
      "self": {
        "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/ce2af347-586d-4b31-b728-1e925f51fdfc/0"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/storage/file/moves/*/ce2af347-586d-4b31-b728-
1e925f51fdfc"
  }
}
}
```


Retrieving a specific file move in a file move operation

```
# The API:
/api/storage/file/moves/{node.uuid}/{uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/file/moves/*/ce2af347-586d-
4b31-b728-1e925f51fdfc/1" -H 'accept: application/hal+json'

# The response:
{
"node": {
  "uuid": "76bc12d1-10aa-11ec-a5b5-005056acf2dd",
```

```
    "name": "node1",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/76bc12d1-10aa-11ec-a5b5-005056acf2dd"
      }
    }
  },
  "uuid": "ce2af347-586d-4b31-b728-1e925f51fdfc",
  "index": 1,
  "source": {
    "svm": {
      "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
      "name": "vs0"
    },
    "volume": {
      "uuid": "18fd9110-26f1-11ec-bf0d-005056acf2dd",
      "name": "fv1"
    },
    "path": "dir1/f2.txt"
  },
  "destination": {
    "svm": {
      "uuid": "5b2c8638-10bc-11ec-8e1b-005056acf2dd",
      "name": "vs0"
    },
    "volume": {
      "uuid": "220bdb3a-26f1-11ec-bf0d-005056acf2dd",
      "name": "fv2"
    },
    "path": "dir2/f2.txt"
  },
  "_links": {
    "self": {
      "href": "/api/storage/file/moves/76bc12d1-10aa-11ec-a5b5-
005056acf2dd/ce2af347-586d-4b31-b728-1e925f51fdfc/1"
    }
  }
}
```


Retrieve all ongoing file move operations in the cluster

GET `/storage/file/moves`

Introduced In: 9.11

Retrieves all ongoing file move operations in the cluster.

Related ONTAP commands

- `volume file move show`
- `volume rebalance file-move show`

Parameters

Name	Type	In	Required	Description
failure.code	string	query	False	Filter by failure.code
failure.message	string	query	False	Filter by failure.message
failure.arguments.code	string	query	False	Filter by failure.arguments.code
failure.arguments.message	string	query	False	Filter by failure.arguments.message
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
source.volume.uuid	string	query	False	Filter by source.volume.uuid
source.volume.name	string	query	False	Filter by source.volume.name
source.svm.name	string	query	False	Filter by source.svm.name
source.svm.uuid	string	query	False	Filter by source.svm.uuid
source.path	string	query	False	Filter by source.path
index	integer	query	False	Filter by index
cutover_time	integer	query	False	Filter by cutover_time
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
is_flexgroup	boolean	query	False	Filter by is_flexgroup
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
elapsed_time	integer	query	False	Filter by elapsed_time
max_throughput	integer	query	False	Filter by max_throughput
is_destination_ready	boolean	query	False	Filter by is_destination_ready
max_cutover_time	integer	query	False	Filter by max_cutover_time
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
is_snapshot_fenced	boolean	query	False	Filter by is_snapshot_fenced
scanner.total	integer	query	False	Filter by scanner.total
scanner.percent	integer	query	False	Filter by scanner.percent
scanner.progress	integer	query	False	Filter by scanner.progress
scanner.state	string	query	False	Filter by scanner.state
destination.volume.uuid	string	query	False	Filter by destination.volume.uuid
destination.volume.name	string	query	False	Filter by destination.volume.name

Name	Type	In	Required	Description
destination.svm.name	string	query	False	Filter by destination.svm.name
destination.svm.uuid	string	query	False	Filter by destination.svm.uuid
destination.path	string	query	False	Filter by destination.path
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	collection_links	
num_records	integer	Number of Records
records	array[file_move]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "cutover_time": 8,
      "destination": {
        "path": "d1/d2/file1",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "elapsed_time": 100,
      "failure": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
```

```
      },
      "index": 0,
      "max_cutover_time": 10,
      "max_throughput": 250000,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "scanner": {
        "percent": 80,
        "progress": 80000,
        "state": "string",
        "total": 100000
      },
      "source": {
        "path": "d1/d2/file1",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "4fcb3159-a4ee-42b5-bb16-f752f2c430fc",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

destination

Destination file information.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Contains the most recent failure reason for move operation.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

destinations

Path for file move operation.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

sources

Path for file move operation.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

files_to_move

A list of source files along with the destination file they are moved to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory. This is only used for FlexVol volume file move operations.

Name	Type	Description
destinations	array[destinations]	The destination file information.
sources	array[sources]	The source file information.

node

Node hosting the destination of this move operation.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM of the source reference file.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume of the source reference file.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

reference

Reference file information.

scanner

Name	Type	Description
percent	integer	Scanner progress, as a percentage.
progress	integer	Scanner progress, in bytes scanned.
state	string	Status of the file move scanner.

Name	Type	Description
total	integer	Total bytes to be scanned.

source

Source file information.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

svm

SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_move

Details of a file move operation.

Name	Type	Description
cutover_time	integer	Time that the file move operation takes before cutover completes, in seconds.
destination	destination	Destination file information.
elapsed_time	integer	Time elapsed since the start of the file move operation, in seconds.
failure	error	Contains the most recent failure reason for move operation.
index	integer	An additional unique element identifying one file among many that could possibly be moved as part of a job. File index is an identifier ordered by the file path arrays provided during create. For file move operations that involve only one file, the file-index value of zero is always correct.
is_destination_ready	boolean	Indicates whether the destination file is ready for use.
is_flexgroup	boolean	Indicates whether this is a FlexGroup file move operation.

Name	Type	Description
is_snapshot_fenced	boolean	Indicates whether snapshots are fenced.
max_cutover_time	integer	The maximum amount of time, in seconds that the source can be quiesced before a destination file must be made available for read-write traffic. Not supported in FlexGroup volume file move operations.
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1 MB/s is set to 1 MB/s. A non-zero value greater than 1 MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.
node	node	Node hosting the destination of this move operation.
scanner	scanner	
source	source	Source file information.
svm	svm	SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.
uuid	string	The UUID which uniquely identifies the job that started this move operation.
volume	volume	FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Start a file move operation

POST `/storage/file/moves`

Introduced In: 9.11

Starts a file move operation. This API can be used to move files from one FlexVol volume to another FlexVol volume or within a FlexGroup volume for capacity rebalancing.
For a FlexGroup volume file move operation, only one source file can be specified in files_to_move. The source volume is the FlexGroup volume. The destination volume is the destination FlexGroup volume constituent to move the file to. When `automatic` is true, destination volume is not required. The source path is the path to the file to be moved within the FlexGroup volume. If the destination path is specified, it must be the same as the source path.

Required properties for file move operation

- `files_to_move` - List of files with the destination they are to be moved to.

Optional properties for file move operation

- `reference` - The source reference file for moving multiple files.

Default property values

- `max_throughput` - *0*
- `max_cutover_time` - *10*
- `reference.max_cutover_time` - *10*

Related ONTAP commands

- `volume file move start`
- `volume rebalance file-move start`

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	If true, the FlexGroup volume file move operation breaks the existing lock state on the file being moved. Breaking the lock state may cause a disruption for some client applications. • Default value:
automatic	boolean	query	False	If true, the FlexGroup volume file move operation selects the destination constituent automatically. • Default value:
disruptive	boolean	query	False	If true, the FlexGroup volume file move operation is disruptive to the clients. The file handle of the file being moved changes. If false, the file handle remains the same. The non-disruptive file move operation is only available on FlexGroup volumes with granular data property enabled. • Default value: • Introduced in: 9.12
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
cutover_time	integer	Time that the file move operation takes before cutover completes, in seconds.
destination	destination	Destination file information.
elapsed_time	integer	Time elapsed since the start of the file move operation, in seconds.
files_to_move	files_to_move	A list of source files along with the destination file they are moved to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory. This is only used for FlexVol volume file move operations.
index	integer	An additional unique element identifying one file among many that could possibly be moved as part of a job. File index is an identifier ordered by the file path arrays provided during create. For file move operations that involve only one file, the file-index value of zero is always correct.
is_destination_ready	boolean	Indicates whether the destination file is ready for use.
is_flexgroup	boolean	Indicates whether this is a FlexGroup file move operation.
is_snapshot_fenced	boolean	Indicates whether snapshots are fenced.
max_cutover_time	integer	The maximum amount of time, in seconds that the source can be quiesced before a destination file must be made available for read-write traffic. Not supported in FlexGroup volume file move operations.

Name	Type	Description
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1 MB/s is set to 1 MB/s. A non-zero value greater than 1 MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.
node	node	Node hosting the destination of this move operation.
reference	reference	Reference file information.
scanner	scanner	
source	source	Source file information.
svm	svm	SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.
uuid	string	The UUID which uniquely identifies the job that started this move operation.
volume	volume	FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Example request


```
{
  "cutover_time": 8,
  "destination": {
    "path": "d1/d2/file1",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "elapsed_time": 100,
  "files_to_move": {
    "destinations": [
      {
        "path": "d1/d2/file1",
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ],
    "sources": [
      {
        "path": "d1/d2/file1",
        "svm": {
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "volume": {
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  },
  "index": 0,
  "max_cutover_time": 10,
```

```
  "max_throughput": 250000,
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "reference": {
    "max_cutover_time": 5,
    "path": "string",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "scanner": {
    "percent": 80,
    "progress": 80000,
    "state": "string",
    "total": 100000
  },
  "source": {
    "path": "d1/d2/file1",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "4fcb3159-a4ee-42b5-bb16-f752f2c430fc",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918236	The specified "volume.uuid" and "volume.name" do not refer to the same volume.
2621462	SVM `svm.name` does not exist.
2621706	The specified "svm.uuid" and "svm.name" do not refer to the same SVM.
7012352	File locations are inconsistent. All files must be on the same volume.
7012353	Exceeded the file operations supported number of files.
7012354	Unable to pair the number of source files to destination files.
7012357	Cannot start a file operation until all cluster nodes support the file operations capability.
7012358	The specified source path is invalid.
7012359	The specified destination path is invalid.
7012360	The SVMs are not in an intracluster peering relationship.
7012361	The SVMs peering relationship does not include application "file-move".
7012362	The SVMs are not yet in a peered state.
7012363	Cannot move files. All file operations must be managed by the destination SVM’s administrator.

Error Code	Description
7012364	Cannot move file from SVM "svm.name" to SVM "svm.name". Moving a file between SVMs is not supported.
7012365	Copying a file between clusters is not supported.
7012367	A reference path may only be specified if multiple source paths are specified.
7012368	The reference path must have a matching source path.
7012371	The reference cutover time exceeds the maximum allowable time.
7012374	Source volume and destination volume have different home clusters.
7012376	Operation not allowed on a volume that is part of a SnapMirror Synchronous relationship.
7012377	Cannot start a file move operation on the volume because an active volume conversion is in progress.
7013352	One or more source files must be specified in "files_to_move.sources".
7013353	One or more destination files or directories must be specified in "files_to_move.destinations".
7013354	"path" must be specified.
7013355	Moving files between FlexVol volumes and FlexGroup volumes or constituents is not supported.
7013356	Moving files between FlexVol volumes and FlexGroup constituents is not supported.
7013357	The specified volume could not be found.
7013358	The specified SVM or volume UUID could not be found.
7013359	The SVM and volume must both be provided.
7018861	Cannot start the file operation. The volume is offline.
7018877	Maximum combined total (50) of file and LUN copy and move operations reached. When one or more of the operations has completed, try the command again.
7018937	The file is already on the destination constituent.
13107222	Internal error.
13107415	Failed to lookup a volume property.
13107431	Failed to lookup an SVM property.
13109260	Failed to enable granular data on the volume.

Error Code	Description
144179201	The file move start operation failed.
144179206	Source file does not exist.
144179207	Volume capacity balancing requires an effective cluster version of 9.10.1 or later.
144180200	Destination constituent not a member of FlexGroup volume.
144180201	Destination constituent not properly configured.
144180203	Volume capacity rebalancing is not supported on FlexCache volumes.
144180204	Volume capacity rebalancing is not supported on object store volumes.
144180205	The system is busy.
144180207	Volume capacity rebalancing is not supported on inactive MetroCluster configurations.
144180208	Disruptive file movement is not supported when granular data is enabled on the volume. Try the operation again using "disruptive=false".
144181200	Too many source or destination files are specified for a file move within a FlexGroup volume. There must be one source file identifying a file on a FlexGroup volume and either zero or one destination files identifying the destination constituent.
144181201	For a file move within a FlexGroup volume, the source volume must be a FlexGroup volume, and the destination volume must be a constituent.
144181202	The specified source volume UUID is for a constituent. For a file move within a FlexGroup volume, the source volume must be a FlexGroup volume, and the destination volume must be a constituent.
144181203	A destination constituent must be provided in "files_to_move.destinations" if it is not being selected automatically. Use the "automatic" query to enable automatic destination constituent selection.
144181204	A destination constituent is provided while automatic destination constituent selection is enabled with the "automatic" query.
144181205	The destination volume is not a constituent. For a file move within a FlexGroup volume, the destination volume must be a constituent of the source FlexGroup volume.

Error Code	Description
144181207	The destination constituent SVM is not the same as the source SVM. For a file move within a FlexGroup volume, the destination constituent must be a constituent of the source FlexGroup volume.
144181208	The destination file path is different from the source file path. For a file move within a FlexGroup volume, the path of the source file does not change.
144181209	The specified SVM for the destination constituent differs from the SVM of the source FlexGroup volume. For a file move within a FlexGroup volume, the destination constituent must be a constituent of the source FlexGroup volume.
144181210	The "force" parameter is not supported unless the "disruptive" parameter is specified as "true".
144182201	Volume capacity rebalancing using non-disruptive file move operations and granular data requires an effective cluster version of 9.11.1 or later.
144182228	Operation is not supported on FlexGroup volumes with only one constituent.
196608143	Cannot start the operation. The volume is undergoing a secure purge operation.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

destination

Destination file information.

Name	Type	Description
path	string	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Contains the most recent failure reason for move operation.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

destinations

Path for file move operation.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

sources

Path for file move operation.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
volume	volume	

files_to_move

A list of source files along with the destination file they are moved to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory. This is only used for FlexVol volume file move operations.

Name	Type	Description
destinations	array[destinations]	The destination file information.
sources	array[sources]	The source file information.

node

Node hosting the destination of this move operation.

Name	Type	Description
name	string	
uuid	string	

svm

SVM of the source reference file.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume of the source reference file.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

reference

Reference file information.

Name	Type	Description
max_cutover_time	integer	The maximum amount of time, in seconds that the source reference file can be quiesced before the corresponding destination file must be made available for read-write traffic. Not supported in FlexGroup volume file move operations.
path	string	The source reference file. If a reference file is specified, data for other files being moved will be transferred as a difference from the reference file. This can save bandwidth and destination storage if the specified source files share blocks. If provided, this input must match one of the source file paths. This input need not be provided if only one source file is specified. Not supported in FlexGroup volume file move operations.
svm	svm	SVM of the source reference file.
volume	volume	Volume of the source reference file.

scanner

Name	Type	Description
percent	integer	Scanner progress, as a percentage.
progress	integer	Scanner progress, in bytes scanned.
state	string	Status of the file move scanner.
total	integer	Total bytes to be scanned.

source

Source file information.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

svm

SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_move

Details of a file move operation.

Name	Type	Description
cutover_time	integer	Time that the file move operation takes before cutover completes, in seconds.
destination	destination	Destination file information.
elapsed_time	integer	Time elapsed since the start of the file move operation, in seconds.
files_to_move	files_to_move	A list of source files along with the destination file they are moved to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory. This is only used for FlexVol volume file move operations.
index	integer	An additional unique element identifying one file among many that could possibly be moved as part of a job. File index is an identifier ordered by the file path arrays provided during create. For file move operations that involve only one file, the file-index value of zero is always correct.

Name	Type	Description
is_destination_ready	boolean	Indicates whether the destination file is ready for use.
is_flexgroup	boolean	Indicates whether this is a FlexGroup file move operation.
is_snapshot_fenced	boolean	Indicates whether snapshots are fenced.
max_cutover_time	integer	The maximum amount of time, in seconds that the source can be quiesced before a destination file must be made available for read-write traffic. Not supported in FlexGroup volume file move operations.
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1 MB/s is set to 1 MB/s. A non-zero value greater than 1 MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.
node	node	Node hosting the destination of this move operation.
reference	reference	Reference file information.
scanner	scanner	
source	source	Source file information.
svm	svm	SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.
uuid	string	The UUID which uniquely identifies the job that started this move operation.

Name	Type	Description
volume	volume	FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Check the status of an active file move operation

GET `/storage/file/moves/{node.uuid}/{uuid}/{index}`

Introduced In: 9.12

Overview

Retrieve the status of an on-going file move operation.

Related ONTAP commands

- `volume file move show`
- `volume rebalance file-move show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Unique identifier of the node.
uuid	string	path	True	Unique identifier of the file move operation.

Name	Type	In	Required	Description
index	integer	path	True	The index of the file move within the overall operation
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
cutover_time	integer	Time that the file move operation takes before cutover completes, in seconds.
destination	destination	Destination file information.
elapsed_time	integer	Time elapsed since the start of the file move operation, in seconds.
failure	error	Contains the most recent failure reason for move operation.
index	integer	An additional unique element identifying one file among many that could possibly be moved as part of a job. File index is an identifier ordered by the file path arrays provided during create. For file move operations that involve only one file, the file-index value of zero is always correct.
is_destination_ready	boolean	Indicates whether the destination file is ready for use.
is_flexgroup	boolean	Indicates whether this is a FlexGroup file move operation.
is_snapshot_fenced	boolean	Indicates whether snapshots are fenced.

Name	Type	Description
max_cutover_time	integer	The maximum amount of time, in seconds that the source can be quiesced before a destination file must be made available for read-write traffic. Not supported in FlexGroup volume file move operations.
max_throughput	integer	Maximum amount of data, in bytes that can be transferred per second in support of this operation. A non-zero value less than 1 MB/s is set to 1 MB/s. A non-zero value greater than 1 MB/s is truncated to the nearest integral megabyte value. If unspecified, the default value is "0" which means no range is set for the data transfer.
node	node	Node hosting the destination of this move operation.
scanner	scanner	
source	source	Source file information.
svm	svm	SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.
uuid	string	The UUID which uniquely identifies the job that started this move operation.
volume	volume	FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Example response


```
{
  "cutover_time": 8,
  "destination": {
    "path": "d1/d2/file1",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "elapsed_time": 100,
  "failure": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "index": 0,
  "max_cutover_time": 10,
  "max_throughput": 250000,
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
```

```
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scanner": {
    "percent": 80,
    "progress": 80000,
    "state": "string",
    "total": 100000
  },
  "source": {
    "path": "d1/d2/file1",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "4fcb3159-a4ee-42b5-bb16-f752f2c430fc",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
```

```
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
6521	Cannot quiesce source file. Source file "file.name" is under construction and is being used by either a file copy or move operation. Wait a few minutes and try the operation again.
6522	Volume is not VM aligned.
6523	File suffix not VM aligned.
6524	Completion interface not specified.
6525	Maximum simultaneous file operations reached.
6526	Lock conflict.
6527	Permission denied.
6528	Waiting for an I/O fence to be released.
6529	Waiting for space to become available.
6530	Waiting for an external process to complete.
6531	Source volume was deleted.
6532	Slowed due to resource constraints.
6533	Volume does not support block reallocation.
6534	File operation not supported.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

destination

Destination file information.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Contains the most recent failure reason for move operation.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

destinations

Path for file move operation.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

sources

Path for file move operation.

Name	Type	Description
path	string	

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

files_to_move

A list of source files along with the destination file they are moved to. If the terminal path component of the destination is a directory, then the source file's basename is replicated in that directory. This is only used for FlexVol volume file move operations.

Name	Type	Description
destinations	array[destinations]	The destination file information.
sources	array[sources]	The source file information.

node

Node hosting the destination of this move operation.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM of the source reference file.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Volume of the source reference file.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

reference

Reference file information.

scanner

Name	Type	Description
percent	integer	Scanner progress, as a percentage.
progress	integer	Scanner progress, in bytes scanned.
state	string	Status of the file move scanner.
total	integer	Total bytes to be scanned.

source

Source file information.

Name	Type	Description
path	string	
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

svm

SVM of the FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

FlexGroup volume in file move operation. Only used in a FlexGroup volume file move operation.

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage FlexCache volumes

Storage flexcache flexcaches endpoint overview

Overview

FlexCache is a persistent cache of an origin volume. An origin volume can only be a FlexVol while a FlexCache is always a FlexGroup.

The following relationship configurations are supported:

– Intra-Vserver where FlexCache and the corresponding origin volume reside in the same Vserver.

– Cross-Vserver but intra-cluster where FlexCache and the origin volume reside in the same cluster but belong to different Vservers.

– Cross-cluster where FlexCache and the origin volume reside in different clusters.

FlexCache supports fan-out and more than one FlexCache can be created from one origin volume.
This API retrieves and manages FlexCache configurations in the cache cluster.

FlexCache APIs

The following APIs can be used to perform operations related with FlexCache:

– GET /api/storage/flexcache/flexcaches

– GET /api/storage/flexcache/flexcaches/{uuid}

– POST /api/storage/flexcache/flexcaches

– DELETE /api/storage/flexcache/flexcaches/{uuid}

Examples

Creating a FlexCache

The POST request is used to create a FlexCache.

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/flexcache/flexcaches" -H
"accept: application/json" -H  "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr_1\" } ], \"name\": \"fc_333\",
\"origins\": [ {  \"svm\": { \"name\": \"vs_3\"  }, \"volume\": {
\"name\": \"vol_o1\" } } ], \"svm\": { \"name\": \"vs_1\" } }"

# The response:
{
"job": {
  "uuid": "e751dd5d-0f3c-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e751dd5d-0f3c-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/flexcache/flexcaches" -H
"accept: application/json" -H  "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr_1\" } ], \"name\": \"fc_333\",
\"origins\": [ {  \"svm\": { \"name\": \"vs_3\"  }, \"volume\": {
\"name\": \"vol_o1\" } } ], \"svm\": { \"name\": \"vs_1\" },  \"path\":
\"/fc_333\", \"prepopulate\": { \"dir_paths\": [ \"/dir1\" ] } }"

# The response:
{
"job": {
  "uuid": "e751dd5d-0f3c-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e751dd5d-0f3c-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/flexcache/flexcaches" -H
"accept: application/json" -H  "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\":           \"aggr_1\" } ], \"name\":
\"fc_333\", \"origins\": [ {  \"svm\": { \"name\": \"vs_3\"  },
\"volume\": { \"name\": \"vol_o1\" } } ], \"svm\": { \"name\": \"vs_1\" },
\"path\": \"/       fc_333\", \"prepopulate\": { \"dir_paths\": [
\"/dir1\" ], \"exclude_dir_paths\": [ \"/dir1/dir11\" ] } }"

# The response:
{
"job": {
  "uuid": "5afe9ea4-1dcf-11eb-b006-005056ac6a93",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5afe9ea4-1dcf-11eb-b006-005056ac6a93"
    }
  }
}
}
```

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/flexcache/flexcaches" -H
"accept: application/json" -H  "Content-Type: application/json" -d "{
\"aggregates\": [ { \"name\": \"aggr_1\" } ], \"name\": \"fc_333\",
\"origins\": [ {  \"svm\": { \"name\": \"vs_3\"  }, \"volume\": {
\"name\": \"vol_o1\" } } ], \"svm\":{ \"name\": \"vs_1\" }, \"dr_cache\":
true,  \"path\": \"/fc_333\", \"prepopulate\": { \"dir_paths\": [
\"/dir1\" ] } }"

# The response:
{
"job": {
  "uuid": "e751dd5d-0f3c-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e751dd5d-0f3c-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

Retrieving FlexCache attributes

The GET request is used to retrieve FlexCache attributes. The object includes a large set of fields which can be expensive to retrieve. Most notably, the fields size, guarantee.type, aggregates, path, origins.ip_address, origins.size, and origins.state are expensive to retrieve. The recommended method to use this API is to filter and retrieve only the required fields.

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/flexcache/flexcaches?" -H
"accept: application/json"

# The response:
{
"records": [
  {
    "uuid": "04d5e07b-0ebe-11e9-8180-0050568e0b79",
    "name": "fc_322",
    "_links": {
```

```
      "self": {
        "href": "/api/storage/flexcache/flexcaches/04d5e07b-0ebe-11e9-
8180-0050568e0b79"
      }
    }
  },
  {
    "uuid": "47902654-0ea4-11e9-8180-0050568e0b79",
    "name": "fc_321",
    "_links": {
      "self": {
        "href": "/api/storage/flexcache/flexcaches/47902654-0ea4-11e9-
8180-0050568e0b79"
      }
    }
  },
  {
    "uuid": "77e911ff-0ebe-11e9-8180-0050568e0b79",
    "name": "fc_323",
    "_links": {
      "self": {
        "href": "/api/storage/flexcache/flexcaches/77e911ff-0ebe-11e9-
8180-0050568e0b79"
      }
    }
  },
  {
    "uuid": "ddb42bbc-0e95-11e9-8180-0050568e0b79",
    "name": "fc_32",
    "_links": {
      "self": {
        "href": "/api/storage/flexcache/flexcaches/ddb42bbc-0e95-11e9-
8180-0050568e0b79"
      }
    }
  },
  {
    "uuid": "ec774932-0f3c-11e9-8b2b-0050568e0b79",
    "name": "fc_333",
    "_links": {
      "self": {
        "href": "/api/storage/flexcache/flexcaches/ec774932-0f3c-11e9-
8b2b-0050568e0b79"
      }
    }
  }
```

```
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/storage/flexcache/flexcaches?"
  }
}
}
```

Retrieving the attributes of a FlexCache

The GET request is used to retrieve the attributes of a FlexCache. The object includes a large set of fields which can be expensive to retrieve. Most notably, the fields size, guarantee.type, aggregates, path, origins.ip_address, origins.size, and origins.state are expensive to retrieve. The recommended method to use this API is to filter and retrieve only the required fields.

```
# The API:
/api/storage/flexcache/flexcaches/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/flexcache/flexcaches/ec774932-
0f3c-11e9-8b2b-0050568e0b79" -H  "accept: application/json"

# The response:
{
"uuid": "ec774932-0f3c-11e9-8b2b-0050568e0b79",
"name": "fc_333",
"svm": {
  "name": "vs_1",
  "uuid": "e708fbe2-0e92-11e9-8180-0050568e0b79"
},
"size": 4294967296,
"guarantee": {
    "type": "volume"
},
"dr_cache": "true",
"aggregates": [
  {
    "name": "aggr_1",
    "uuid": "26f34b76-88f8-4a47-b5e0-d8e901fb1114"
  }
],
"origins": [
  {
    "ip_address": "10.140.103.175",
    "size": 20971520,
```

```
    "create_time": "2019-01-03T15:19:55+05:30",
    "state": "online",
    "volume": {
      "name": "vol_o1",
      "uuid": "2bc957dd-2617-4afb-8d2f-66ac6070d313"
    },
    "svm": {
      "name": "vs_3",
      "uuid": "8aa2cd28-0e92-11e9-b391-0050568e4115"
    },
    "cluster": {
      "name": "node2",
      "uuid": "50733f81-0e90-11e9-b391-0050568e4115"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/storage/flexcache/flexcaches/ec774932-0f3c-11e9-8b2b-
0050568e0b79"
  }
}
}
```


Deleting a FlexCache

The DELETE request is used to delete a FlexCache.

```
# The API:
/api/storage/flexcache/flexcaches

# The call:
curl -X DELETE "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/ec774932-0f3c-11e9-8b2b-0050568e0b79"
-H  "accept: application/json"

# The response:
{
"job": {
  "uuid": "e17994f2-0f3e-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e17994f2-0f3e-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

Modifying a FlexCache volume

Use the PATCH request to update a FlexCache volume.

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call:
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/ec774932-0f3c-11e9-8b2b-0050568e0b79"
-H  "accept: application/json" -H  "Content-Type: application/json" -d "{
\"prepopulate\": { \"dir_paths\": [ \"/dir1\" ] } }"

# The response:
{
"job": {
  "uuid": "e751dd5d-0f3c-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e751dd5d-0f3c-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/ec774932-0f3c-11e9-8b2b-0050568e0b79"
-H  "accept: application/json" -H  "Content-Type: application/json" -d "{
\"prepopulate\": { \"dir_paths\": [ \"/dir1\" ], \"exclude_dir_paths\": [
\"/dir1/dir11\" ] } }"

# The response:
{
"job": {
  "uuid": "b574c48c-1da7-11eb-b006-005056ac6a93",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b574c48c-1da7-11eb-b006-005056ac6a93"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/28f9734a-2fc2-11ed-a5d5-005056bb2b7"
-H "accept: application/json" -H  "Content-Type: application/json" -d "{
\"writeback\" : { \"enabled\": true } }"

# The response:
{
"job": {
  "uuid": "c521a541-3046-11ed-a5d5-005056bbb2b7",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c521a541-3046-11ed-a5d5-005056bbb2b7"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/28f9734a-2fc2-11ed-a5d5-005056bb2b7"
-H "accept: application/json" -H "Content-Type: application/json" -d "{
\"writeback\" : { \"enabled\": false } }"

# The response:
{
"job": {
  "uuid": "17e193f3-304b-11ed-a5d5-005056bbb2b7",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/17e193f3-304b-11ed-a5d5-005056bbb2b7"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/885dfd0f-ac37-11ed-a2ca-005056bb5573"
-H "accept: application/json" -d '{"relative_size" : {"enabled":true,
"percentage" : 50}}'

# The response:
{
"job": {
  "uuid": "34d9c90d-ac38-11ed-a2ca-005056bb5573",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/34d9c90d-ac38-11ed-a2ca-005056bb5573"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/885dfd0f-ac37-11ed-a2ca-005056bb5573"
-H "accept: application/json" -d '{"relative_size" : {"enabled":false}}'

# The response:
{
"job": {
  "uuid": "14bfcc28-ac82-11ed-83bd-005056bb5573",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/14bfcc28-ac82-11ed-83bd-005056bb5573"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/885dfd0f-ac37-11ed-a2ca-005056bb5573"
-H "accept: application/json" -d '{"atime_scrub" : {"enabled":true,
"period" : 30}}'

# The response:
{
"job": {
  "uuid": "34d9c90d-ac38-11ed-a2ca-005056bb5573",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/34d9c90d-ac38-11ed-a2ca-005056bb5573"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/885dfd0f-ac37-11ed-a2ca-005056bb5573"
-H "accept: application/json" -d '{"atime_scrub" : {"enabled":false}}'

# The response:
{
"job": {
  "uuid": "14bfcc28-ac82-11ed-83bd-005056bb5573",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/14bfcc28-ac82-11ed-83bd-005056bb5573"
    }
  }
}
}
```

```
# the API:
/api/storage/flexcache/flexcaches/{uuid}

# The call
curl -X PATCH "https://<mgmt-
ip>/api/storage/flexcache/flexcaches/885dfd0f-ac37-11ed-a2ca-005056bb5573"
-H "accept: application/json" -d '{"cifs_change_notify" :
{"enabled":true}}'

# The response:
{
"job": {
  "uuid": "14bfcc28-ac82-11ed-83bd-005056bb5573",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/14bfcc28-ac82-11ed-83bd-005056bb5573"
    }
  }
}
}
```

Retrieve a FlexCache volume in the cluster

GET `/storage/flexcache/flexcaches`

Introduced In: 9.6

Retrieves FlexCache in the cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `origins.ip_address` - IP address of origin.
- `origins.size` - Physical size of origin.
- `origins.state` - State of origin.
- `size` - Physical size of FlexCache.
- `guarantee.type` - Space guarantee style of FlexCache.
- `aggregates.name` or `aggregates.uuid` - Name or UUID of aggregate of FlexCache volume.
- `path` - Fully-qualified path of the owning SVM's namespace where the FlexCache is mounted.

Related ONTAP commands

- `volume flexcache show`

Learn more

- DOC /storage/flexcache/flexcaches

Parameters

Name	Type	In	Required	Description
cifs_change_notify.enabled	boolean	query	False	Filter by cifs_change_notify.enabled • Introduced in: 9.14
dr_cache	boolean	query	False	Filter by dr_cache • Introduced in: 9.9
override_encryption	boolean	query	False	Filter by override_encryption • Introduced in: 9.14

Name	Type	In	Required	Description
writeback.enabled	boolean	query	False	Filter by writeback.enabled • Introduced in: 9.12
size	integer	query	False	Filter by size
atime_scrub.enabled	boolean	query	False	Filter by atime_scrub.enabled • Introduced in: 9.14
atime_scrub.period	integer	query	False	Filter by atime_scrub.period • Introduced in: 9.14
path	string	query	False	Filter by path
use_tiered_aggregate	boolean	query	False	Filter by use_tiered_aggregate • Introduced in: 9.8
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
constituents_per_aggregate	integer	query	False	Filter by constituents_per_aggregate
uuid	string	query	False	Filter by uuid
name	string	query	False	Filter by name • maxLength: 203 • minLength: 1
origins.ip_address	string	query	False	Filter by origins.ip_address

Name	Type	In	Required	Description
origins.volume.uuid	string	query	False	Filter by origins.volume.uuid
origins.volume.name	string	query	False	Filter by origins.volume.name
origins.state	string	query	False	Filter by origins.state
origins.create_time	string	query	False	Filter by origins.create_time
origins.svm.name	string	query	False	Filter by origins.svm.name
origins.svm.uuid	string	query	False	Filter by origins.svm.uuid
origins.size	integer	query	False	Filter by origins.size
origins.cluster.name	string	query	False	Filter by origins.cluster.name
origins.cluster.uuid	string	query	False	Filter by origins.cluster.uuid
relative_size.percentage	integer	query	False	Filter by relative_size.percentage • Introduced in: 9.13
relative_size.enabled	boolean	query	False	Filter by relative_size.enabled • Introduced in: 9.13
guarantee.type	string	query	False	Filter by guarantee.type • Introduced in: 9.7
aggregates.uuid	string	query	False	Filter by aggregates.uuid

Name	Type	In	Required	Description
aggregates.name	string	query	False	Filter by aggregates.name
global_file_locking_enabled	boolean	query	False	Filter by global_file_locking_enabled • Introduced in: 9.9
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[flexcache]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "aggregates": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "constituents_per_aggregate": 1,
      "guarantee": {
        "type": "string"
      },
      "name": "vol1",
      "origins": [
        {
          "cluster": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "cluster1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
```

```
          "create_time": "2018-06-04 15:00:00 -0400",
          "ip_address": "10.10.10.7",
          "size": 0,
          "state": "string",
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          },
          "volume": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ],
      "path": "/user/my_fc",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

atime_scrub

FlexCache volume atime-based scrub

Name	Type	Description
enabled	boolean	Specifies whether scrubbing of inactive files based on atime is enabled for the FlexCache volume. When scrubbing is enabled, files whose atime is older than the specified duration are evicted from the cache volume. The scrubber runs once a day and looks for files whose atime has exceeded the provisioned value.

Name	Type	Description
period	integer	Specifies the atime duration in days after which a cached file is considered inactive. Inactive files are purged from the FlexCache volumes when the scrubber runs once a day.

cifs_change_notify

Notifies that a change has been made to the FlexCache volume CIFS.

Name	Type	Description
enabled	boolean	Specifies whether a CIFS change notification is enabled for the FlexCache volume.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

prepopulate

FlexCache prepopulate

relative_size

FlexCache Relative Size

Name	Type	Description
enabled	boolean	Specifies whether the relative sizing is enabled for the FlexCache volume. Relative sizing is introduced as a part of follow the origin feature. When relative sizing is enabled, it blocks any modifications done manually in the absolute size of the FlexCache volume. The size of the FlexCache volume is calculated and entered automatically based on the size of the origin volume.
percentage	integer	Specifies the percent size the FlexCache volume should have relative to the total size of the origin volume. This property is only relevant to a FlexCache volume that has the relative size property enabled.

svm

FlexCache SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

writeback

FlexCache Writeback

Name	Type	Description
enabled	boolean	Indicates whether or not writeback is enabled for the FlexCache volume. Writeback is a storage method where data is first written to the FlexCache volume and then written to the origin of a FlexCache volume.

flexcache

Defines the cache endpoint of FlexCache.

Name	Type	Description
_links	_links	
aggregates	array[aggregates]	
atime_scrub	atime_scrub	FlexCache volume atime-based scrub
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
constituents_per_aggregate	integer	Number of FlexCache constituents per aggregate when the 'aggregates' field is mentioned.
dr_cache	boolean	If set to true, a DR cache is created.
global_file_locking_enabled	boolean	Specifies whether or not a FlexCache volume has global file locking mode enabled. Global file locking mode is a mode where protocol read locking semantics are enforced across all FlexCaches and origins of a FlexCache volume. When global file locking mode is enabled, the "is_disconnected_mode_off_for_locks" flag is always set to "true".
guarantee	guarantee	
name	string	FlexCache name
origins	array[flexcache_relationship]	

Name	Type	Description
override_encryption	boolean	If set to true, a plaintext FlexCache volume for an encrypted origin volume is created.
path	string	The fully-qualified path in the owning SVM's namespace at which the FlexCache is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one FlexCache be mounted at any given junction path.
relative_size	relative_size	FlexCache Relative Size
size	integer	Physical size of the FlexCache. The recommended size for a FlexCache is 10% of the origin volume. The minimum FlexCache constituent size is 1GB.
svm	svm	FlexCache SVM
use_tiered_aggregate	boolean	Specifies whether or not a Fabricpool-enabled aggregate can be used in FlexCache creation. The use_tiered_aggregate is only used when auto-provisioning a FlexCache volume.
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a FlexCache volume in the cluster

POST `/storage/flexcache/flexcaches`

Introduced In: 9.6

Creates a FlexCache in the cluster.

Required properties

- `name` - Name of FlexCache volume.
- `origins.volume.name` - Name of the origin volume. This volume can only be identified by its name, not by its UUID.
- `origins.svm.name` - Name of origin Vserver.
- `svm.name` or `svm.uuid` - Name or UUID of Vserver where FlexCache will be created.

Recommended optional properties

- `path` - Path to mount the FlexCache volume
- `prepopulate.dir_paths` - List of directory-paths to be prepopulated for the FlexCache volume.
- `prepopulate.exclude_dir_paths` - List of directory-paths to be excluded from prepopulation for he FlexCache volume.

Default property values

If not specified in POST, the following default property values are assigned:

- `size` - 10% of origin volume size or 1GB per constituent, whichever is greater.
- `guarantee.type` - none. FlexCache is thin provisioned by default.
- `constituents_per_aggregate` - 4 if aggregates.name or aggregates.uuid is used.
- `use_tiered_aggregate` - false if aggr-list is not used. This property is only used when auto-provisioning a FlexCache volume.
- `is_disconnected_mode_off_for_locks` - false. This property specifies if the origin will honor the cache side locks when doing the lock checks in the disconnected mode.

- `dr_cache` - false if FlexCache is not a DR cache. This property is used to create a DR FlexCache.
- `global_file_locking_enabled` - false. This property specifies whether global file locking is enabled on the FlexCache volume.
- `writeback.enabled` - false. This property specifies whether writeback is enabled for the FlexCache volume.
- `relative_size.enabled` - false. This property specifies whether the relative sizing is enabled for the FlexCache volume.
- `relative_size.percentage` - 10. This property specifies the percent size FlexCache volume should have relative to the total size of the origin volume.
- `override_encryption` - false. If true, this property is used to create a plaintext FlexCache volume for an encrypted origin volume.
- `atime_scrub.enabled` - false. This property specifies whether scrubbing of inactive files based on atime is enabled for the FlexCache volume.
- `atime_scrub.period` - 30. This property specifies the atime duration in days after which the file can be scrubbed from the FlexCache volume if it stays unused beyond the duration.
- `cifs_change_notify.enabled` - false. This property specifies whether a CIFS change notification is enabled for the FlexCache volume.

Related ONTAP commands

- `volume flexcache create`
- `volume flexcache prepopulate start`

Learn more

- DOC /storage/flexcache/flexcaches

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
aggregates	array[aggregates]	
atime_scrub	atime_scrub	FlexCache volume atime-based scrub

Name	Type	Description
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
constituents_per_aggregate	integer	Number of FlexCache constituents per aggregate when the 'aggregates' field is mentioned.
dr_cache	boolean	If set to true, a DR cache is created.
global_file_locking_enabled	boolean	Specifies whether or not a FlexCache volume has global file locking mode enabled. Global file locking mode is a mode where protocol read locking semantics are enforced across all FlexCaches and origins of a FlexCache volume. When global file locking mode is enabled, the "is_disconnected_mode_off_for_locks" flag is always set to "true".
guarantee	guarantee	
name	string	FlexCache name
origins	array[flexcache_relationship]	
override_encryption	boolean	If set to true, a plaintext FlexCache volume for an encrypted origin volume is created.
path	string	The fully-qualified path in the owning SVM's namespace at which the FlexCache is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one FlexCache be mounted at any given junction path.
prepopulate	prepopulate	FlexCache prepopulate
relative_size	relative_size	FlexCache Relative Size

Name	Type	Description
size	integer	Physical size of the FlexCache. The recommended size for a FlexCache is 10% of the origin volume. The minimum FlexCache constituent size is 1GB.
svm	svm	FlexCache SVM
use_tiered_aggregate	boolean	Specifies whether or not a Fabricpool-enabled aggregate can be used in FlexCache creation. The use_tiered_aggregate is only used when auto-provisioning a FlexCache volume.
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

Example request


```
{
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "constituents_per_aggregate": 1,
  "guarantee": {
    "type": "string"
  },
  "name": "vol1",
  "origins": [
    {
      "cluster": {
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "create_time": "2018-06-04 15:00:00 -0400",
      "ip_address": "10.10.10.7",
      "size": 0,
      "state": "string",
      "svm": {
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "path": "/user/my_fc",
  "prepopulate": {
    "dir_paths": [
      "/dir1"
    ],
    "exclude_dir_paths": [
      "/dir1/dir2"
    ]
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11	Provided value is smaller than the required minimum flexvolume size.
262186	Invalid combination with field "aggregates".

Error Code	Description
917937	The root path "/" is an invalid value for the field "path".
918723	Aggregate value cannot be used to create a volume on this platform.
66846735	The peer state of the relationship is not peered or the FlexCache application is not supported by the relationship
66846762	The origin volume in the SVM is offline
66846767	Volume does not exist in SVM.
66846867	Global file locking (GFL) mode is already disabled for origin of a FlexCache volume in SVM. Enabling GFL is only supported when the first FlexCache volume is created for an origin. Set is_global_file_locking_enabled" to "false".
66846768	Volume already exists in SVM.
66846863	The "preserve-msid" parameter is not supported when creating the FlexCache volume in the same SVM as the origin of a FlexCache volume
66846870	Either the SVM name or origin volume name is missing
66846871	Constituents per aggregate are specified but aggregate name is missing
66846872	More than one origin volume is specified
66846873	The specified SVM UUID is incorrect for the specified SVM name
66846874	The specified name and SVM uuid refer to different aggregates.
66846875	The specified aggregate name does not exist
66846876	The specified SVM does not exist or is not peered
66846877	The specified origin SVM name is of zero length
66846878	The specified SVM UUID is invalid
66846998	Failed to modify the "relative_size_percentage" property of volume in SVM because the "relative_size_enabled" property is false.
66846730	Failed to create a FlexCache volume
66846760	The specified SVM is not a data Vserver
66846787	The specified aggregate is a SnapLock aggregate
66846812	The specified aggregate is a Composite aggregate
66846812	The specified junction path is under a FlexCache volume

Error Code	Description
66846834	FlexCache encryption requires a cluster version of 9.6 or higher
66846835	A volume encryption license is not found
66847013	Creating a FlexCache volume with override-encryption property set to true requires an effective cluster version of 9.14.0 or later on both origin and cache clusters
66846844	An object store server volume cannot be the origin of a FlexCache volume
66846902	FlexCache is not supported on an All SAN Array system.
66846915	The "use_tiered_aggregate" option is only supported when auto provisioning the FlexCache volume.
66847026	Failed to enable the atime-scrub-enabled property for the FlexCache volume because the atime-update-property is false

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

atime_scrub

FlexCache volume atime-based scrub

Name	Type	Description
enabled	boolean	Specifies whether scrubbing of inactive files based on atime is enabled for the FlexCache volume. When scrubbing is enabled, files whose atime is older than the specified duration are evicted from the cache volume. The scrubber runs once a day and looks for files whose atime has exceeded the provisioned value.
period	integer	Specifies the atime duration in days after which a cached file is considered inactive. Inactive files are purged from the FlexCache volumes when the scrubber runs once a day.

cifs_change_notify

Notifies that a change has been made to the FlexCache volume CIFS.

Name	Type	Description
enabled	boolean	Specifies whether a CIFS change notification is enabled for the FlexCache volume.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

cluster

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

prepopulate

FlexCache prepopulate

Name	Type	Description
dir_paths	array[string]	
exclude_dir_paths	array[string]	
recurse	boolean	Specifies whether or not the prepopulate action should search through the `dir_paths` recursively. If not set, the default value *true* is used.

relative_size

FlexCache Relative Size

Name	Type	Description
enabled	boolean	Specifies whether the relative sizing is enabled for the FlexCache volume. Relative sizing is introduced as a part of follow the origin feature. When relative sizing is enabled, it blocks any modifications done manually in the absolute size of the FlexCache volume. The size of the FlexCache volume is calculated and entered automatically based on the size of the origin volume.
percentage	integer	Specifies the percent size the FlexCache volume should have relative to the total size of the origin volume. This property is only relevant to a FlexCache volume that has the relative size property enabled.

svm

FlexCache SVM

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

writeback

FlexCache Writeback

Name	Type	Description
enabled	boolean	Indicates whether or not writeback is enabled for the FlexCache volume. Writeback is a storage method where data is first written to the FlexCache volume and then written to the origin of a FlexCache volume.

flexcache

Defines the cache endpoint of FlexCache.

Name	Type	Description
aggregates	array[aggregates]	
atime_scrub	atime_scrub	FlexCache volume atime-based scrub
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
constituents_per_aggregate	integer	Number of FlexCache constituents per aggregate when the 'aggregates' field is mentioned.
dr_cache	boolean	If set to true, a DR cache is created.
global_file_locking_enabled	boolean	Specifies whether or not a FlexCache volume has global file locking mode enabled. Global file locking mode is a mode where protocol read locking semantics are enforced across all FlexCaches and origins of a FlexCache volume. When global file locking mode is enabled, the "is_disconnected_mode_off_for_locks" flag is always set to "true".
guarantee	guarantee	
name	string	FlexCache name
origins	array[flexcache_relationship]	

Name	Type	Description
override_encryption	boolean	If set to true, a plaintext FlexCache volume for an encrypted origin volume is created.
path	string	The fully-qualified path in the owning SVM's namespace at which the FlexCache is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one FlexCache be mounted at any given junction path.
prepopulate	prepopulate	FlexCache prepopulate
relative_size	relative_size	FlexCache Relative Size
size	integer	Physical size of the FlexCache. The recommended size for a FlexCache is 10% of the origin volume. The minimum FlexCache constituent size is 1GB.
svm	svm	FlexCache SVM
use_tiered_aggregate	boolean	Specifies whether or not a Fabricpool-enabled aggregate can be used in FlexCache creation. The use_tiered_aggregate is only used when auto-provisioning a FlexCache volume.
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a FlexCache volume

DELETE `/storage/flexcache/flexcaches/{uuid}`

Introduced In: 9.6

Deletes a FlexCache. If a FlexCache volume is online, it is offlined before deletion.

Related ONTAP commands

- `volume flexcache delete`

Learn more

- DOC /storage/flexcache/flexcaches

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the FlexCache.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66846879	The specified volume UUID is not a FlexCache volume
66846731	Failed to delete the FlexCache volume
524546	Failed to delete the FlexCache volume because the FlexCache volume is not unmounted
66846980	Failed to delete the FlexCache volume because it has the writeback property enabled

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve attributes of the FlexCache volume in the cluster

GET `/storage/flexcache/flexcaches/{uuid}`

Introduced In: 9.6

Retrieves attributes of the FlexCache in the cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are included by default in GET. The recommended method to use this API is to filter and retrieve only the required fields. See Requesting specific fields to learn more.

- `origins.ip_address` - IP address of origin.
- `origins.size` - Physical size of origin.
- `origins.state` - State of origin.
- `size` - Physical size of FlexCache.
- `guarantee.type` - Space guarantee style of FlexCache.
- `aggregates.name` or `aggregates.uuid` - Name or UUID of aggregate of FlexCache volume.
- `path` - Fully-qualified path of the owning SVM's namespace where the FlexCache is mounted.

Related ONTAP commands

- `volume flexcache show`

Learn more

- DOC /storage/flexcache/flexcaches

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of FlexCache.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
aggregates	array[aggregates]	
atime_scrub	atime_scrub	FlexCache volume atime-based scrub

Name	Type	Description
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
constituents_per_aggregate	integer	Number of FlexCache constituents per aggregate when the 'aggregates' field is mentioned.
dr_cache	boolean	If set to true, a DR cache is created.
global_file_locking_enabled	boolean	Specifies whether or not a FlexCache volume has global file locking mode enabled. Global file locking mode is a mode where protocol read locking semantics are enforced across all FlexCaches and origins of a FlexCache volume. When global file locking mode is enabled, the "is_disconnected_mode_off_for_locks" flag is always set to "true".
guarantee	guarantee	
name	string	FlexCache name
origins	array[flexcache_relationship]	
override_encryption	boolean	If set to true, a plaintext FlexCache volume for an encrypted origin volume is created.
path	string	The fully-qualified path in the owning SVM's namespace at which the FlexCache is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one FlexCache be mounted at any given junction path.
relative_size	relative_size	FlexCache Relative Size

Name	Type	Description
size	integer	Physical size of the FlexCache. The recommended size for a FlexCache is 10% of the origin volume. The minimum FlexCache constituent size is 1GB.
svm	svm	FlexCache SVM
use_tiered_aggregate	boolean	Specifies whether or not a Fabricpool-enabled aggregate can be used in FlexCache creation. The use_tiered_aggregate is only used when auto-provisioning a FlexCache volume.
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "aggregates": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "constituents_per_aggregate": 1,
  "guarantee": {
    "type": "string"
  },
  "name": "vol1",
  "origins": [
    {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "create_time": "2018-06-04 15:00:00 -0400",
      "ip_address": "10.10.10.7",
      "size": 0,
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
```

```
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "path": "/user/my_fc",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

atime_scrub

FlexCache volume atime-based scrub

Name	Type	Description
enabled	boolean	Specifies whether scrubbing of inactive files based on atime is enabled for the FlexCache volume. When scrubbing is enabled, files whose atime is older than the specified duration are evicted from the cache volume. The scrubber runs once a day and looks for files whose atime has exceeded the provisioned value.
period	integer	Specifies the atime duration in days after which a cached file is considered inactive. Inactive files are purged from the FlexCache volumes when the scrubber runs once a day.

cifs_change_notify

Notifies that a change has been made to the FlexCache volume CIFS.

Name	Type	Description
enabled	boolean	Specifies whether a CIFS change notification is enabled for the FlexCache volume.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

prepopulate

FlexCache prepopulate

relative_size

FlexCache Relative Size

Name	Type	Description
enabled	boolean	Specifies whether the relative sizing is enabled for the FlexCache volume. Relative sizing is introduced as a part of follow the origin feature. When relative sizing is enabled, it blocks any modifications done manually in the absolute size of the FlexCache volume. The size of the FlexCache volume is calculated and entered automatically based on the size of the origin volume.
percentage	integer	Specifies the percent size the FlexCache volume should have relative to the total size of the origin volume. This property is only relevant to a FlexCache volume that has the relative size property enabled.

svm

FlexCache SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

writeback

FlexCache Writeback

Name	Type	Description
enabled	boolean	Indicates whether or not writeback is enabled for the FlexCache volume. Writeback is a storage method where data is first written to the FlexCache volume and then written to the origin of a FlexCache volume.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Pre-populate a FlexCache volume in the cluster

PATCH `/storage/flexcache/flexcaches/{uuid}`

Introduced In: 9.8

Prepopulates a FlexCache volume in the cluster, or modifies configuration of the FlexCache volume.

Recommended optional properties

- `uuid` - FlexCache volume UUID.
- `prepopulate.exclude_dir_paths` - List of directory-paths to be excluded from prepopulation for the FlexCache volume.
- `prepopulate.dir_paths` - List of directory-paths to be prepopulated for the FlexCache volume.
- `writeback.enabled` - false. This property specifies whether writeback is enabled for the FlexCache volume.

- `relative_size.enabled` - This property specifies whether the relative sizing is enabled for the FlexCache volume.
- `relative_size.percentage` - This property specifies the percent size FlexCache volume should have relative to the total size of the origin volume.
- `atime_scrub.enabled` - This property specifies whether the atime based scrub is enabled for the FlexCache volume.
- `atime_scrub.period` - This property specifies the duration in days after which inactive files can be scrubbed from FlexCache volume.
- `cifs_change_notify.enabled` - This property specifies whether a CIFS change notification is enabled for the FlexCache volume.

Default property values

If not specified in PATCH, the following default property value is assigned:

- `prepopulate.recurse` - Default value is "true".

Related ONTAP commands

- `volume flexcache prepopulate start`
- `volume flexcache config modify`

Learn more

- DOC /storage/flexcache/flexcaches

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the FlexCache volume.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
atime_scrub	atime_scrub	FlexCache volume atime-based scrub
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
prepopulate	prepopulate	FlexCache prepopulate
relative_size	relative_size	FlexCache Relative Size

Name	Type	Description
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

Example request

```
{
  "dr_cache": true,
  "global_file_locking_enabled": true,
  "override_encryption": true,
  "prepopulate": {
    "dir_paths": [
      "/dir1"
    ],
    "exclude_dir_paths": [
      "/dir1/dir2"
    ]
  },
  "use_tiered_aggregate": true,
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66846921	Failed to prepopulate. Empty path list
66846922	FlexCache volume does not exist in the SVM
66846923	Failed to prepopulate FlexCache volume because the origin volume is not reachable
66846924	FlexCache volume is offline
66846925	FlexCache volume is not mounted or the junction-path is not active
66846926	The junction-path of FlexCache volume is not active
66846927	FlexCache volume does not have an origin volume
66846928	FlexCache volume does not exist
66846929	Using FlexCache prepopulate requires an effective cluster version of 9.8.0 or later
66846930	Using FlexCache prepopulate in a MetroCluster configuration requires an effective cluster version of 9.8.0 or later on both the local and remote clusters
66846931	Internal Error. FlexCache prepopulate job queue failed. Wait a few minutes, and then try the operation again
66846936	Failed to lookup root file handle for origin of FlexCache volume. Wait a few minutes, and then try the operation again
66846937	Internal error. Failed to initialize thread
66846939	Internal error. Failed to get the MSID of the origin volume for FlexCache volume
66846943	Failed to prepopulate because dir_path does not exist
66846944	Failed to get root constituent for FlexCache volume
66846945	Origin of FlexCache volume is not mounted or the junction-path is not active

Error Code	Description
66846946	The junction-path of origin of FlexCache volume is not active
66846947	FlexCache prepopulate job for FlexCache volume already exists
66846948	FlexCache prepopulate job for FlexCache volume could not be queued because the node is offline
66846958	Exclude path(s) does not exist in origin volume
66846988	Cannot enable writeback for FlexCache volume because the origin is a data protection volume. Writeback is only supported on FlexCache volumes with origins that are read-write volumes
66846995	Using FlexCache relative-size requires an effective cluster version of 9.13.1 or later
66846997	Failed to modify the relative-size-percentage property of the FlexCache volume because the used size of the FlexCache Volume is greater than the newly calculated size based on the value of the relative-size-percentage property
66846997	Failed to modify the relative-size-percentage property of FlexCache volume because the relative-size-percentage property is not valid
66846998	Failed to modify the relative-size-percentage property of FlexCache volume because the is-relative-size-enabled property is false
66847010	Failed to modify the relative-size-percentage property of FlexCache volume because autosize is enabled on the FlexCache volume
66847026	Failed to enable the atime-scrub-enabled property for the FlexCache volume because the atime-update-property is false
66847027	Failed to modify atime-scrub-period property of the FlexCache volume because the atime-scrub-enabled property is false

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

atime_scrub

FlexCache volume atime-based scrub

Name	Type	Description
enabled	boolean	Specifies whether scrubbing of inactive files based on atime is enabled for the FlexCache volume. When scrubbing is enabled, files whose atime is older than the specified duration are evicted from the cache volume. The scrubber runs once a day and looks for files whose atime has exceeded the provisioned value.
period	integer	Specifies the atime duration in days after which a cached file is considered inactive. Inactive files are purged from the FlexCache volumes when the scrubber runs once a day.

cifs_change_notify

Notifies that a change has been made to the FlexCache volume CIFS.

Name	Type	Description
enabled	boolean	Specifies whether a CIFS change notification is enabled for the FlexCache volume.

guarantee

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

cluster

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
volume	volume	

prepopulate

FlexCache prepopulate

Name	Type	Description
dir_paths	array[string]	
exclude_dir_paths	array[string]	
recurse	boolean	Specifies whether or not the prepopulate action should search through the `dir_paths` recursively. If not set, the default value *true* is used.

relative_size

FlexCache Relative Size

Name	Type	Description
enabled	boolean	Specifies whether the relative sizing is enabled for the FlexCache volume. Relative sizing is introduced as a part of follow the origin feature. When relative sizing is enabled, it blocks any modifications done manually in the absolute size of the FlexCache volume. The size of the FlexCache volume is calculated and entered automatically based on the size of the origin volume.
percentage	integer	Specifies the percent size the FlexCache volume should have relative to the total size of the origin volume. This property is only relevant to a FlexCache volume that has the relative size property enabled.

svm

FlexCache SVM

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

writeback

FlexCache Writeback

Name	Type	Description
enabled	boolean	Indicates whether or not writeback is enabled for the FlexCache volume. Writeback is a storage method where data is first written to the FlexCache volume and then written to the origin of a FlexCache volume.

flexcache

Defines the cache endpoint of FlexCache.

Name	Type	Description
atime_scrub	atime_scrub	FlexCache volume atime-based scrub
cifs_change_notify	cifs_change_notify	Notifies that a change has been made to the FlexCache volume CIFS.
prepopulate	prepopulate	FlexCache prepopulate
relative_size	relative_size	FlexCache Relative Size
uuid	string	FlexCache UUID. Unique identifier for the FlexCache.
writeback	writeback	FlexCache Writeback

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage storage FlexCache origin volumes

Storage flexcache origins endpoint overview

Overview

FlexCache is a persistent cache of an origin volume. An origin volume can only be a FlexVol while a FlexCache is always a FlexGroup.

The following relationship configurations are supported:

– Intra-Vserver where FlexCache and the corresponding origin volume reside in the same Vserver.

– Cross-Vserver but intra-cluster where FlexCache and the origin volume reside in the same cluster but belong to different Vservers.

– Cross-cluster where FlexCache and the origin volume reside in different clusters.

FlexCache supports fan-out and more than one FlexCache can be created from one origin volume.
This API retrieves the origin of FlexCache configurations in the origin cluster.

FlexCache APIs

The following APIs can be used to perform operations related to the origin of a FlexCache:

– GET /api/storage/flexcache/origins

– GET /api/storage/flexcache/origins/{uuid}

– PATCH /api/storage/flexcache/origins/{uuid}

Examples

Retrieving origins of FlexCache attributes

The GET request is used to retrieve the origins of FlexCache attributes.

```
# The API:
/api/storage/flexcache/origins

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/flexcache/origins?" -H
"accept: application/json"

# The response:
{
  "records": [
    {
      "uuid": "2bc957dd-2617-4afb-8d2f-66ac6070d313",
      "name": "vol_o1",
      "_links": {
        "self": {
          "href": "/api/storage/flexcache/origins/2bc957dd-2617-4afb-8d2f-
66ac6070d313"
        }
      }
    },
    {
      "uuid": "80fcaee4-0dc2-488b-afb8-86d28a34cda8",
      "name": "vol_1",
      "_links": {
        "self": {
          "href": "/api/storage/flexcache/origins/80fcaee4-0dc2-488b-afb8-
86d28a34cda8"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/storage/flexcache/origins?"
    }
  }
}
```

Retrieving the attributes of an origin volume

The GET request is used to retrieve the attributes of an origin volume.

```
# The API:
/api/storage/flexcache/origins/{uuid}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/storage/flexcache/origins/80fcaee4-
0dc2-488b-afb8-86d28a34cda8" -H  "accept: application/json"

# The response:
{
  "uuid": "80fcaee4-0dc2-488b-afb8-86d28a34cda8",
  "name": "vol_1",
  "svm": {
    "name": "vs_3",
    "uuid": "8aa2cd28-0e92-11e9-b391-0050568e4115"
  },
  "block_level_invalidation": "false",
  "global_file_locking_enabled": "true",
  "flexcaches": [
    {
      "ip_address": "10.140.103.183",
      "create_time": "2019-01-02T19:27:22+05:30",
      "volume": {
        "name": "fc_42",
        "uuid": "4e7f9d49-0e96-11e9-aed0-0050568eddbe"
      },
      "svm": {
        "name": "vs_1_4",
        "uuid": "36f68322-0e93-11e9-aed0-0050568eddbe"
      },
      "cluster": {
        "name": "node4",
        "uuid": "c32f16b8-0e90-11e9-aed0-0050568eddbe"
      }
    },
    {
      "ip_address": "10.140.103.183",
      "create_time": "2019-01-02T21:08:34+05:30",
      "volume": {
        "name": "fc_421",
        "uuid": "71ee8f36-0ea4-11e9-aed0-0050568eddbe"
      },
      "svm": {
        "name": "vs_1_4",
        "uuid": "36f68322-0e93-11e9-aed0-0050568eddbe"
      },
      "cluster": {
        "name": "node4",
        "uuid": "c32f16b8-0e90-11e9-aed0-0050568eddbe"
```

```
      }
    },
    {
      "ip_address": "10.140.103.183",
      "create_time": "2019-01-03T11:14:38+05:30",
      "volume": {
        "name": "fc_422"
      },
      "svm": {
        "name": "vs_1_4",
        "uuid": "36f68322-0e93-11e9-aed0-0050568eddbe"
      },
      "cluster": {
        "name": "node4",
        "uuid": "c32f16b8-0e90-11e9-aed0-0050568eddbe"
      }
    },
    {
      "ip_address": "10.140.103.179",
      "size": 4294967296,
      "create_time": "2019-01-02T19:24:14+05:30",
      "state": "online",
      "volume": {
        "name": "fc_32",
        "uuid": "ddb42bbc-0e95-11e9-8180-0050568e0b79"
      },
      "svm": {
        "name": "vs_1",
        "uuid": "e708fbe2-0e92-11e9-8180-0050568e0b79"
      },
      "cluster": {
        "name": "node3",
        "uuid": "8eb21b3b-0e90-11e9-8180-0050568e0b79"
      }
    },
    {
      "ip_address": "10.140.103.179",
      "size": 4294967296,
      "create_time": "2019-01-02T21:07:23+05:30",
      "state": "online",
      "volume": {
        "name": "fc_321",
        "uuid": "47902654-0ea4-11e9-8180-0050568e0b79"
      },
      "svm": {
        "name": "vs_1",
```

```
        "uuid": "e708fbe2-0e92-11e9-8180-0050568e0b79"
      },
      "cluster": {
        "name": "node3",
        "uuid": "8eb21b3b-0e90-11e9-8180-0050568e0b79"
      }
    },
    {
      "ip_address": "10.140.103.179",
      "size": 4294967296,
      "create_time": "2019-01-03T00:11:38+05:30",
      "state": "online",
      "volume": {
        "name": "fc_322",
        "uuid": "04d5e07b-0ebe-11e9-8180-0050568e0b79"
      },
      "svm": {
        "name": "vs_1",
        "uuid": "e708fbe2-0e92-11e9-8180-0050568e0b79"
      },
      "cluster": {
        "name": "node3",
        "uuid": "8eb21b3b-0e90-11e9-8180-0050568e0b79"
      }
    },
    {
      "ip_address": "10.140.103.179",
      "size": 4294967296,
      "create_time": "2019-01-03T00:14:52+05:30",
      "state": "online",
      "volume": {
        "name": "fc_323",
        "uuid": "77e911ff-0ebe-11e9-8180-0050568e0b79"
      },
      "svm": {
        "name": "vs_1",
        "uuid": "e708fbe2-0e92-11e9-8180-0050568e0b79"
      },
      "cluster": {
        "name": "node3",
        "uuid": "8eb21b3b-0e90-11e9-8180-0050568e0b79"
      }
    }
  ],
  "_links": {
    "self": {
```

```
      "href": "/api/storage/flexcache/origins/80fcaee4-0dc2-488b-afb8-
86d28a34cda8"
    }
  }
}
```

Modifying origin options of an origin volume

Use the PATCH request to update options of an origin volume.

```
# the API:
/api/storage/flexcache/origins/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/flexcache/origins/1fbc0ebb-
2440-11eb-a86c-005056ac8ca0"  -H  "accept: application/json" -H  "Content-
Type: application/json" -d "{ \"block_level_invalidation\": \"true\" } "

# The response:
{
"job": {
  "uuid": "e751dd5d-0f3c-11e9-8b2b-0050568e0b79",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e751dd5d-0f3c-11e9-8b2b-0050568e0b79"
    }
  }
}
}
```

Retrieve the origin of a FlexCache in the cluster

GET `/storage/flexcache/origins`

Introduced In: 9.6

Retrieves origin of FlexCache in the cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `flexcaches.ip_address` - IP address of FlexCache.
- `flexcaches.size` - Physical size of FlexCache.

- `flexcaches.guarantee.type` - Space guarantee style of FlexCache.
- `flexcaches.state` - State of FlexCache.

Related ONTAP commands

- `volume flexcache origin show-caches`

Learn more

- DOC /storage/flexcache/origins

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
name	string	query	False	Filter by name • maxLength: 203 • minLength: 1
flexcaches.ip_address	string	query	False	Filter by flexcaches.ip_address
flexcaches.volume.uuid	string	query	False	Filter by flexcaches.volume.uuid
flexcaches.volume.name	string	query	False	Filter by flexcaches.volume.name
flexcaches.state	string	query	False	Filter by flexcaches.state
flexcaches.create_time	string	query	False	Filter by flexcaches.create_time
flexcaches.svm.name	string	query	False	Filter by flexcaches.svm.name
flexcaches.svm.uuid	string	query	False	Filter by flexcaches.svm.uuid

Name	Type	In	Required	Description
flexcaches.size	integer	query	False	Filter by flexcaches.size
flexcaches.cluster.name	string	query	False	Filter by flexcaches.cluster.name
flexcaches.cluster.uuid	string	query	False	Filter by flexcaches.cluster.uuid
global_file_locking_enabled	boolean	query	False	Filter by global_file_locking_enabled • Introduced in: 9.9
uuid	string	query	False	Filter by uuid
block_level_invalidation	boolean	query	False	Filter by block_level_invalidation • Introduced in: 9.9
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[flexcache_origin]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "flexcaches": [
        {
          "cluster": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "cluster1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "create_time": "2018-06-04 15:00:00 -0400",
          "ip_address": "10.10.10.7",
          "size": 0,
          "state": "string",
          "svm": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "svm1",
            "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
          },
          "volume": {
            "_links": {
              "self": {
```

```
                "href": "/api/resourcelink"
              }
            },
            "name": "volume1",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          }
        }
      ],
      "name": "vol1, vol_2",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563512"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

svm

Origin volume SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

flexcache_origin

Defines the origin endpoint of FlexCache.

Name	Type	Description
_links	_links	
block_level_invalidation	boolean	Block level invalidation enables the FlexCache volume to retain blocks that are not changed at the FlexCache volume without having to evict them. This means that the FlexCache volume does not have to again incur the computational cost of fetching blocks over the WAN from the FlexCache volume origin on the next client access. Block level invalidation is a property of the origin volume. Without block level invalidation, any write at the origin volume would evict the whole file at the FlexCache volume, since by default, origin volume does a file level invalidation.
flexcaches	array[flexcache_relationship]	
global_file_locking_enabled	boolean	Specifies whether a global file locking option is enabled for an origin volume of a FlexCache volume.
name	string	Origin volume name
svm	svm	Origin volume SVM
uuid	string	Origin volume UUID. Unique identifier for origin of FlexCache.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve attributes of the origin of a FlexCache volume in the cluster

GET `/storage/flexcache/origins/{uuid}`

Introduced In: 9.6

Retrieves attributes of the origin of a FlexCache in the cluster.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are included by default in GET results. The recommended method to use this API is to filter and retrieve only the required fields. See Requesting specific fields to learn more.

- `flexcaches.ip_address` - IP address of FlexCache.
- `flexcaches.size` - Physical size of FlexCache.
- `flexcaches.guarantee.type` - Space guarantee style of FlexCache.
- `flexcaches.state` - State of FlexCache.
- `flexcaches.dr_cache` - True if the cache is a DR cache.

Related ONTAP commands

- `volume flexcache origin show-caches`

Learn more

- DOC /storage/flexcache/origins

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of origin of FlexCache.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
block_level_invalidation	boolean	Block level invalidation enables the FlexCache volume to retain blocks that are not changed at the FlexCache volume without having to evict them. This means that the FlexCache volume does not have to again incur the computational cost of fetching blocks over the WAN from the FlexCache volume origin on the next client access. Block level invalidation is a property of the origin volume. Without block level invalidation, any write at the origin volume would evict the whole file at the FlexCache volume, since by default, origin volume does a file level invalidation.
flexcaches	array[flexcache_relationship]	
global_file_locking_enabled	boolean	Specifies whether a global file locking option is enabled for an origin volume of a FlexCache volume.
name	string	Origin volume name
svm	svm	Origin volume SVM
uuid	string	Origin volume UUID. Unique identifier for origin of FlexCache.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "flexcaches": [
    {
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "create_time": "2018-06-04 15:00:00 -0400",
      "ip_address": "10.10.10.7",
      "size": 0,
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ],
  "name": "vol1, vol_2",
  "svm": {
    "_links": {
```

```
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563512"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

cluster

Name	Type	Description
_links	_links	
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
svm	svm	SVM, applies only to SVM-scoped objects.
volume	volume	

svm

Origin volume SVM

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Modify origin options for a Flexcache origin volume in the cluster

PATCH `/storage/flexcache/origins/{uuid}`

Introduced In: 9.9

Modifies origin options for a origin volume in the cluster.

Required properties

- `uuid` - Origin volume UUID.
- `block_level_invalidation` - Value for the Block Level Invalidation flag - options {true\|false}.

Related ONTAP commands

- `volume flexcache origin config modify`

Learn more

- DOC /storage/flexcache/origins

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the origin of the FlexCache volume.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
block_level_invalidation	boolean	Block level invalidation enables the FlexCache volume to retain blocks that are not changed at the FlexCache volume without having to evict them. This means that the FlexCache volume does not have to again incur the computational cost of fetching blocks over the WAN from the FlexCache volume origin on the next client access. Block level invalidation is a property of the origin volume. Without block level invalidation, any write at the origin volume would evict the whole file at the FlexCache volume, since by default, origin volume does a file level invalidation.
global_file_locking_enabled	boolean	Specifies whether a global file locking option is enabled for an origin volume of a FlexCache volume.
uuid	string	Origin volume UUID. Unique identifier for origin of FlexCache.

Example request

```
{
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563512"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
66846870	Either origin volume uuid or BLI option value is missing
66847020	Failed to get origin volume details using volume uuid
66847021	Failed to modify origin volume options

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

cluster

Name	Type	Description
name	string	
uuid	string	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

flexcache_relationship

Name	Type	Description
cluster	cluster	
create_time	string	Creation time of the relationship.
ip_address	string	Cluster management IP of the remote cluster.
size	integer	Size of the remote volume.
state	string	Volume state
volume	volume	

svm

Origin volume SVM

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

flexcache_origin

Defines the origin endpoint of FlexCache.

Name	Type	Description
block_level_invalidation	boolean	Block level invalidation enables the FlexCache volume to retain blocks that are not changed at the FlexCache volume without having to evict them. This means that the FlexCache volume does not have to again incur the computational cost of fetching blocks over the WAN from the FlexCache volume origin on the next client access. Block level invalidation is a property of the origin volume. Without block level invalidation, any write at the origin volume would evict the whole file at the FlexCache volume, since by default, origin volume does a file level invalidation.
global_file_locking_enabled	boolean	Specifies whether a global file locking option is enabled for an origin volume of a FlexCache volume.
uuid	string	Origin volume UUID. Unique identifier for origin of FlexCache.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage pools

Storage pools endpoint overview

Retrieving storage pool information

The Storage Pools GET API retrieves all shared storage pools in the cluster.

The collection GET returns the storage pool identifiers, UUID and name. The instance GET, by default, returns all of the properties defined in the storage_pool object.
The "show_spares" query returns a response outside of the records body, which includes the groups of usable spares in the cluster.
The usable count for each class of spares does not include reserved spare capacity recommended by ONTAP best practices.

Creating storage pools

Creating a shared storage pool is recommended when distributing flash capacity across the cache tiers of HDD aggregates across an HA pair.
POST can be used with specific properties to create a storage pool as requested. At a minimum, the storage pool name, disk count, and the nodes where it should reside, are required to create a new instance.

When using POST with input properties, three properties are required. These are:

- name - Name of the storage pool.
- node.name or node.uuid - Node that can use capacity from the storage pool in their cache tiers.
- capacity.disk_count - Number of disks to be used to create the storage pool.

Examples

Retrieving a list of storage pools from the cluster

The following example shows the response with a list of storage pools in the cluster:

```
{
"records": [
{
  "uuid": "8255fef7-4737-11ec-bd1b-005056bbb879",
  "nodes": [
    {
      "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
      "name": "node-1",
    },
    {
      "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
      "name": "node-2",
    }
  ],
  "_links": {
    "self": {
      "href": "/api/storage/pools/8255fef7-4737-11ec-bd1b-005056bbb879"
    }
  }
}
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/pools"
  }
}
}
```


```
# The API:
/api/storage/pools

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools?fields=*" -H "accept:
application/json"

# The response:
{
"records": [
{
  "uuid": "8255fef7-4737-11ec-bd1b-005056bbb879",
  "name": "new_sp",
  "nodes": [
    {
```

```
      "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
      "name": "node-1",
    },
    {
      "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
      "name": "node-2",
    }
  ],
  "storage_type": "ssd",
  "capacity": {
      "remaining": 1846542336,
      "total": 7386169344,
      "spare_allocation_units": [
      {
        "node": {
          "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
          "name": "node-1",
        },
        "count": 1,
        "syncmirror_pool": "pool0",
        "size": 1846542336,
        "available_size": 1846542336
      },
      {
        "node": {
          "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
          "name": "node-2",
        },
        "count": 0,
        "syncmirror_pool": "pool0",
        "size": 1846542336,
        "available_size": 0
      }
      ],
      "used_allocation_units": [
      {
        "aggregate": {
          "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
          "name": "test_a"
        },
        "allocated_unit_count": 2,
        "node": {
          "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
          "name": "node-1",
        },
        "capacity": 2769813504
```

```
      },
      {
        "aggregate": {
          "uuid": "f4cc30d5-b052-493a-a49f-19781425f987",
          "name": "test_b"
        },
        "allocated_unit_count": 1,
        "node": {
          "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
          "name": "node-2",
        },
        "capacity": 1384906752
      }
      ],
      "disk_count": 4,
      "disks": [
        {
          "disk": {
            "name": "VMw-1.11"
          },
          "usable_size": 1902379008,
          "total_size": 1908871168,
        },
        {
          "disk": {
            "name": "VMw-1.12"
          },
          "usable_size": 1902379008,
          "total_size": 1908871168,
        },
        {
          "disk": {
            "name": "VMw-1.23"
          },
          "usable_size": 1902379008,
          "total_size": 1908871168,
        },
        {
          "disk": {
            "name": "VMw-1.24"
          },
          "usable_size": 1902379008,
          "total_size": 1908871168,
        }
      ]
    },
```

```
    "health": {
      "state": "normal",
      "is_healthy": true
    },
}
],
"num_records": 1,
}
```

Retrieving the usable spare information for the cluster

The following example shows the response from retrieving usable spare information according to ONTAP best practices.

```
 # The API:
/api/storage/pools?show_spares=true

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools?show_spares=true" -H
"accept: application/json"

# The response:
{
"records": [],
"num_records": 0,
"spares": [
  {
    "disk_class": "solid_state",
    "disk_type": "ssd",
    "size": 3720609792,
    "checksum_style": "block",
    "syncmirror_pool": "pool0",
    "usable": 12,
    "nodes": [
      {
        "uuid": "54af4069-c1f7-11ec-884e-005056bb6e0b",
        "name": "node-1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/54af4069-c1f7-11ec-884e-
005056bb6e0b"
          }
        }
      },
      {
        "uuid": "d50f1acb-c1f6-11ec-9dfd-005056bb8d04",
```

```
        "name": "node-2",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/d50f1acb-c1f6-11ec-9dfd-
005056bb8d04"
          }
        }
      }
    ]
  }
],
"_link": {
  "self": {
    "href": "/api/storage/aggregates?show_spares=true"
  }
}
}
```


Simulating the creation of a storage pool

The following example shows the response containing the simulated layout details of a new storage pool in the cluster.

> Each storage pool UUID provided in this response is not guaranteed to be the same UUID for the storage pool if it is created.


```
# The API:
/api/storage/pools

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/pools?simulate=true&fields=*"
-d "{\"nodes\": [{\"name\": \"node1\"}, {\"name\": \"node2\"}], \"name\":
\"storage_pool_1\", \"capacity\": {\"disk_count\": \"4\"}}" -H "accept:
application/json"

# The response:
{
"records": [
{
  "uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
  "name": "new_sp",
  "nodes": [
    {
      "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
      "name": "node-1",
    },
```

```
      {
        "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
        "name": "node-2",
      }
    ],
    "capacity": {
      "total": 7386169344,
      "disk_count": 4,
      "disks": [
        {
          "disk": {
            "name": "VMw-1.11"
          },
        },
        {
          "disk": {
            "name": "VMw-1.12"
          },
        },
        {
          "disk": {
            "name": "VMw-1.23"
          },
        },
        {
          "disk": {
            "name": "VMw-1.24"
          },
        }
      ]
    }
  }
  ]
  }
```


Retrieve storage pools for the entire cluster

GET `/storage/pools`

Introduced In: 9.11

Retrieves the collection of storage pools for the entire cluster.

Related ONTAP commands

- `storage pool show`

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
nodes.uuid	string	query	False	Filter by nodes.uuid
nodes.name	string	query	False	Filter by nodes.name
health.unhealthy_reason.code	string	query	False	Filter by health.unhealthy_reason.code
health.unhealthy_reason.message	string	query	False	Filter by health.unhealthy_reason.message
health.unhealthy_reason.arguments.code	string	query	False	Filter by health.unhealthy_reason.arguments.code
health.unhealthy_reason.arguments.message	string	query	False	Filter by health.unhealthy_reason.arguments.message
health.state	string	query	False	Filter by health.state
health.is_healthy	boolean	query	False	Filter by health.is_healthy
storage_type	string	query	False	Filter by storage_type
capacity.remaining	integer	query	False	Filter by capacity.remaining
capacity.used_allocation_units.count	integer	query	False	Filter by capacity.used_allocation_units.count
capacity.used_allocation_units.node.uuid	string	query	False	Filter by capacity.used_allocation_units.node.uuid

Name	Type	In	Required	Description
capacity.used_allocation_units.node.name	string	query	False	Filter by capacity.used_allocation_units.node.name
capacity.used_allocation_units.current_usage	integer	query	False	Filter by capacity.used_allocation_units.current_usage
capacity.used_allocation_units.aggregate.uuid	string	query	False	Filter by capacity.used_allocation_units.aggregate.uuid
capacity.used_allocation_units.aggregate.name	string	query	False	Filter by capacity.used_allocation_units.aggregate.name
capacity.spare_allocation_units.size	integer	query	False	Filter by capacity.spare_allocation_units.size
capacity.spare_allocation_units.syncmirror_pool	string	query	False	Filter by capacity.spare_allocation_units.syncmirror_pool
capacity.spare_allocation_units.available_size	integer	query	False	Filter by capacity.spare_allocation_units.available_size
capacity.spare_allocation_units.count	integer	query	False	Filter by capacity.spare_allocation_units.count
capacity.spare_allocation_units.node.uuid	string	query	False	Filter by capacity.spare_allocation_units.node.uuid
capacity.spare_allocation_units.node.name	string	query	False	Filter by capacity.spare_allocation_units.node.name

Name	Type	In	Required	Description
capacity.total	integer	query	False	Filter by capacity.total
capacity.disks.total_size	integer	query	False	Filter by capacity.disks.total_size
capacity.disks.disk.name	string	query	False	Filter by capacity.disks.disk.name
capacity.disks.usable_size	integer	query	False	Filter by capacity.disks.usable_size
capacity.disk_count	integer	query	False	Filter by capacity.disk_count
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of shared storage pools in the cluster.
records	array[storage_pool]	
spares	array[storage_pool_show_spares]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "capacity": {
        "disks": [
          {
            "disk": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "1.0.1"
            },
            "total_size": 0,
            "usable_size": 0
          }
        ],
        "remaining": 0,
        "spare_allocation_units": [
```

```
        {
          "available_size": 0,
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "size": 0,
          "syncmirror_pool": "string"
        }
      ],
      "total": 0,
      "used_allocation_units": [
        {
          "aggregate": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "aggr1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "current_usage": 0,
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ]
    },
    "health": {
      "state": "string",
      "unhealthy_reason": {
        "arguments": [
          {
            "code": "string",
```

```
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    },
    "name": "string",
    "nodes": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "storage_type": "string",
    "uuid": "string"
  }
],
"spares": [
  {
    "checksum_style": "string",
    "disk_class": "solid_state",
    "disk_type": "string",
    "nodes": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ],
    "size": 10156769280,
    "syncmirror_pool": "string",
    "usable": 9
  }
]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
10944513	Unable to retrieve shared disk capability information.
10944514	Unable to enable shared disk capability.
10944527	Storage pools are not supported in MetroCluster configurations.
10944528	Unable to retrieve MetroCluster configuration information.
11206662	There is no storage pool matching the specified UUID or name.
11206667	Storage pool feature is not enabled.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

disk

Reference to the constituent disk object.

Name	Type	Description
_links	_links	
name	string	

storage_pool_disk

Name	Type	Description
disk	disk	Reference to the constituent disk object.
total_size	integer	Raw capacity of the disk, in bytes.
usable_size	integer	Usable capacity of this disk, in bytes.

node

Specifies what node can use this set of allocation units.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pool_spare_allocation_unit

Name	Type	Description
available_size	integer	The usable capacity of this set of allocation units.
count	integer	The number of spare allocation units on this node.
node	node	Specifies what node can use this set of allocation units.
size	integer	Size of each allocation unit.
syncmirror_pool	string	The RAID SyncMirror Pool to which this allocation unit is assigned.

aggregate

The aggregate that is using this cache capacity.

Name	Type	Description
_links	_links	
name	string	

Name	Type	Description
uuid	string	

node

The node hosting the aggregate using this set of allocation units.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pool_used_allocation_unit

Name	Type	Description
aggregate	aggregate	The aggregate that is using this cache capacity.
count	integer	The number of allocation units used by this aggregate.
current_usage	integer	The amount of cache space used by this aggregate.
node	node	The node hosting the aggregate using this set of allocation units.

capacity

Name	Type	Description
disk_count	integer	The number of disks in the storage pool.
disks	array[storage_pool_disk]	Properties of each disk used in the shared storage pool.
remaining	integer	Remaining usable capacity in the flash pool, in bytes.
spare_allocation_units	array[storage_pool_spare_allocation_unit]	Properties of spare allocation units.
total	integer	Total size of the flash pool, in bytes.

Name	Type	Description
used_allocation_units	array[storage_pool_used_allocation_unit]	Information about the storage pool allocation units participating in the cache tier of an aggregate.

error

Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

health

Properties that outline shared storage pool health.

Name	Type	Description
is_healthy	boolean	Indicates whether the storage pool is able to participate in provisioning operations.
state	string	The state of the shared storage pool.
unhealthy_reason	error	Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pool

Name	Type	Description
_links	_links	

Name	Type	Description
capacity	capacity	
health	health	Properties that outline shared storage pool health.
name	string	Storage pool name.
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

storage_pool_show_spares

Available spares for stoarge pool.

Name	Type	Description
checksum_style	string	The checksum type that has been assigned to the spares.
disk_class	string	Disk class of spares.
disk_type	string	Type of disk.
nodes	array[node_reference]	Nodes that can use the usable spares for storage pool.
size	integer	Usable size of each spare, in bytes.
syncmirror_pool	string	SyncMirror spare pool.

Name	Type	Description
usable	integer	Total number of usable spares in the bucket. The usable count for each class of spares does not include reserved spare capacity recommended by ONTAP best practices. • example: 9 • readOnly: 1 • Introduced in: 9.12 • x-nullable: true

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new storage pool

POST `/storage/pools`

Introduced In: 9.11

Creates a new storage pool using available solid state capacity attached to the nodes specified.

Required properties

The following properties are required in the POST body:

- `name` - Name of the new storage pool.
- `nodes[].name` or `nodes[].uuid` - Nodes that can use cache capacity from the new storage pool. Only nodes in the same HA pair can be specified for a given storage pool. Spare cache capacity will be distributed evenly among the specified nodes.
- `capacity.disk_count` - Number of SSDs to be used to create the storage pool.

Related ONTAP commands

- `storage pool create`

Example:

```
POST /api/storage/pools {"nodes": [{"name": "node1"}, {"name": "node2"}],
"name": "storage_pool_1", "capacity": {"disk_count": "4"}}
```

Parameters

Name	Type	In	Required	Description
disk_size	integer	query	False	If set, POST only selects SSDs within five percent of the specified size.
simulate	boolean	query	False	When set to "true", the end point returns a simulated layout of the proposed new storage pool, without changing system state. • Introduced in: 9.12

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
capacity	capacity	
name	string	Storage pool name.

Name	Type	Description
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

Example request


```
{
  "capacity": {
    "disks": [
      {
        "disk": {
          "name": "1.0.1"
        },
        "total_size": 0,
        "usable_size": 0
      }
    ],
    "remaining": 0,
    "spare_allocation_units": [
      {
        "available_size": 0,
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "size": 0,
        "syncmirror_pool": "string"
      }
    ],
    "total": 0,
    "used_allocation_units": [
      {
        "aggregate": {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "current_usage": 0,
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  },
  "name": "string",
  "nodes": [
    {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
```

```
  ],
  "storage_type": "string",
  "uuid": "string"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11206666	Storage pool is unhealthy.
11208658	A storage pool already uses the specified name.

Error Code	Description
11208660	Disk does not exist.
11208661	Disk is not a spare disk.
11208662	Disk is not an SSD.
11208663	Disk is reserved for core dump.
11208664	Could not determine checksum type of disk.
11208666	Could not determine usable size of disk.
11208668	Could not determine connectivity between controller and disk.
11208670	Could not determine original owner of disk.
11208671	Could not determine SyncMirror pool of disk.
11208673	Could not determine HA mode of node.
11208674	Could not determine HA partner of node.
11208675	Disks specified in the disk list are not visible to node.
11208678	The disk list contains disks from nodes which are not in HA pair.
11208679	Storage pools are not supported on nodes.
11208680	Internal error. Cannot determine configuration for node.
11208681	Node is not online.
11208682	Internal error. Sharing configuration mismatch.
11208684	Unable to share disk.
11208686	Disk cannot be shared.
11208687	Unable to retrieve expected sharing configuration.
11208688	Storage pool create job failed.
11208690	Not all nodes sharing the storage pool view disk as a shared disk.
11208691	Not enough matching spares available.
11208692	A disk list or count is a required parameter for storage pool creation.
11208693	Invalid number of disks specified.
11208698	Internal error. Missing node name.
11208699	Internal error. Missing partner name for node configured for HA.
11208701	Node is a standalone node. Do not specify other nodes with a standalone node.

Error Code	Description
11208703	Incorrect number of nodes specified. Specify one node or both nodes in an HA pair.
11208704	Specified nodes are not part of HA relationship. Specify one node or both nodes in an HA pair.
11208705	Disk is a data center SSD, which cannot be used in storage pools.
11208706	Disk is a SSD-ZNS, which cannot be used in storage pools.
11215756	Missing a required field for POST request.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

disk

Reference to the constituent disk object.

Name	Type	Description
name	string	

storage_pool_disk

Name	Type	Description
disk	disk	Reference to the constituent disk object.
total_size	integer	Raw capacity of the disk, in bytes.
usable_size	integer	Usable capacity of this disk, in bytes.

node

Specifies what node can use this set of allocation units.

Name	Type	Description
name	string	
uuid	string	

storage_pool_spare_allocation_unit

Name	Type	Description
available_size	integer	The usable capacity of this set of allocation units.
count	integer	The number of spare allocation units on this node.

Name	Type	Description
node	node	Specifies what node can use this set of allocation units.
size	integer	Size of each allocation unit.
syncmirror_pool	string	The RAID SyncMirror Pool to which this allocation unit is assigned.

aggregate

The aggregate that is using this cache capacity.

Name	Type	Description
name	string	
uuid	string	

node

The node hosting the aggregate using this set of allocation units.

Name	Type	Description
name	string	
uuid	string	

storage_pool_used_allocation_unit

Name	Type	Description
aggregate	aggregate	The aggregate that is using this cache capacity.
count	integer	The number of allocation units used by this aggregate.
current_usage	integer	The amount of cache space used by this aggregate.
node	node	The node hosting the aggregate using this set of allocation units.

capacity

Name	Type	Description
disk_count	integer	The number of disks in the storage pool.
disks	array[storage_pool_disk]	Properties of each disk used in the shared storage pool.
remaining	integer	Remaining usable capacity in the flash pool, in bytes.
spare_allocation_units	array[storage_pool_spare_allocation_unit]	Properties of spare allocation units.
total	integer	Total size of the flash pool, in bytes.
used_allocation_units	array[storage_pool_used_allocation_unit]	Information about the storage pool allocation units participating in the cache tier of an aggregate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

health

Properties that outline shared storage pool health.

Name	Type	Description
is_healthy	boolean	Indicates whether the storage pool is able to participate in provisioning operations.
state	string	The state of the shared storage pool.

node_reference

Name	Type	Description
name	string	
uuid	string	

storage_pool

Name	Type	Description
capacity	capacity	
name	string	Storage pool name.
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage specific storage pools

Storage pools UUID endpoint overview

Updating storage pools

The PATCH operation is used to modify properties of the storage pool. There are several properties that can be modified on a storage pool.
PATCH operations on a storage pool are restricted when another PATCH operation is in progress.
The following is a list of properties that can be modified using the PATCH operation including a brief description for each:

- name - Can be updated to rename the storage pool.
- capacity.disk_count - Can be updated to increase the number of disks in a storage pool.
- capacity.spare_allocation_units[].count - Modifying this value requires that the user specify capacity.spare_allocation_units[].node as well. Modifying this value redistributes spare cache capacity among the nodes specified in the operation
  When expanding a storage pool, the cache tiers of all aggregates using the storage pool's allocation units are expanded automatically.

Simulated storage pool expansion

The PATCH operation also supports simulated expansion of a storage pool.
Running PATCH with the query "simulate" set to "true", and "capacity.disk_count" set to the final disk count will return a response containing the projected new capacity and the new constituent disk list for the storage pool.

Deleting storage pools

If cache capacity from a storage pool is being used in an aggregate, it cannot be deleted.
See the /storage/aggregates API for details on deleting aggregates.

Examples

Retrieving a specific pool from the cluster

The following example shows the response of the requested storage pool. If there is no storage pool with the requested UUID, an error is returned.

```
# The API:
/api/storage/pools/{uuid}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools/870dd9f2-bdfa-4167-b692-
57d1cec874d4" -H "accept: application/json"

# The response:
{
"uuid": "8255fef7-4737-11ec-bd1b-005056bbb879",
"name": "new_sp",
"storage_type": "ssd",
"nodes": [
  {
    "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
    "name": "node-1",
  },
  {
    "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
    "name": "node-2",
  }
],
"capacity": {
    "remaining": 1846542336,
    "total": 7386169344,
    "spare_allocation_units": [
    {
      "node": {
        "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
        "name": "node-1",
      },
      "count": 1,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 1846542336
    },
    {
      "node": {
        "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
        "name": "node-2",
      },
      "count": 0,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 0
    }
    ],
    "used_allocation_units": [
    {
```

```
      "aggregate": {
        "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
        "name": "test_a"
      },
      "allocated_unit_count": 2,
      "node": {
        "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
        "name": "node-1",
      },
      "capacity": 2769813504
    },
    {
      "aggregate": {
        "uuid": "f4cc30d5-b052-493a-a49f-19781425f987",
        "name": "test_b"
      },
      "allocated_unit_count": 1,
      "node": {
        "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
        "name": "node-2",
      },
      "capacity": 1384906752
    }
    ],
    "disk_count": 4,
    "disks": [
      {
        "disk": {
          "name": "VMw-1.11"
        },
        "usable_size": 1902379008,
        "total_size": 1908871168,
      },
      {
        "disk": {
          "name": "VMw-1.12"
        },
        "usable_size": 1902379008,
        "total_size": 1908871168,
      },
      {
        "disk": {
          "name": "VMw-1.23"
        },
        "usable_size": 1902379008,
        "total_size": 1908871168,
```

```
      },
      {
        "disk": {
          "name": "VMw-1.24"
        },
        "usable_size": 1902379008,
        "total_size": 1908871168,
      }
    ]
  },
  "health": {
    "state": "normal",
    "is_healthy": true
  },
}
```

Simulating storage pool expansion

The following example shows the response for a simulated storage pool expansion based on the values of the 'capacity.disk_count' attribute passed in.
The query does not modify the existing storage pool, but rather returns how it will look after the expansion. This will be reflected in the following attributes:

- capacity.total- Total space, in bytes.
- capacity.remaining - New remaining capacity, in bytes.
- capacity.disks.disk - New list of constituent disks.
- capacity.disk_count - New number of disks in the pool.

```
# The API:
/api/storage/pools/{uuid}?simulate=true

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/pools/cae60cfe-deae-42bd-
babb-ef437d118314?simulate=true" -H "accept: application/json" -d
"{\"capacity\": {\"disk_count\": 6}}"

# The response:
{
"records": [
{
  "uuid": "cae60cfe-deae-42bd-babb-ef437d118314",
  "name": "new_sp",
  "capacity": {
      "remaining": 1846542336,
      "total": 7386169344,
      "used_allocation_units": [
```

```
      {
        "aggregate": {
          "uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
          "name": "test_a"
        },
        "current_usage": 2769813504
      },
      {
        "aggregate": {
          "uuid": "f4cc30d5-b052-493a-a49f-19781425f987",
          "name": "test_b"
        },
        "current_usage": 1384906752
      }
      ],
      "disk_count": 6,
      "disks": [
        {
          "disk": {
            "name": "VMw-1.11"
          },
        },
        {
          "disk": {
            "name": "VMw-1.12"
          },
        },
        {
          "disk": {
            "name": "VMw-1.23"
          },
        },
        {
          "disk": {
            "name": "VMw-1.24"
          },
        },
        {
          "disk": {
            "name": "VMw-1.13"
          },
        },
        {
          "disk": {
            "name": "VMw-1.14"
          },
```

```
          }
        ]
      }
}
]
}
```

Adding capacity to a storage pool

The following example shows the workflow of adding disks to the storage pool.

Step 1: Check the current disk count on the storage pool.

```
# The API:
/api/storage/pools

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools/19425837-f2fa-4a9f-8f01-
712f626c983c?fields=capacity.disk_count" -H "accept: application/json"

# The response:{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "sp1",
"capacity": {
  "disk_count": 4
}
}
```

Step 2: Update the pool with the new disk count in 'capacity.disk_count'. The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/pools

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/pools/19425837-f2fa-4a9f-
8f01-712f626c983c" -H "accept: application/hal+json" -d "{\"capacity\":
{\"disk_count\": 6}}"

# The response:
{
"job": {
  "uuid": "c103d15e-730b-11e8-a57f-005056b465d6",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c103d15e-730b-11e8-a57f-005056b465d6"
    }
  }
}
}
```

Step 3: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/pools

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools/19425837-f2fa-4a9f-8f01-
712f626c983c?fields=capacity.disk_count" -H "accept: application/json"

# The response:
{
"uuid": "19425837-f2fa-4a9f-8f01-712f626c983c",
"name": "sp1",
"capacity": {
  "disk_count": 6
}
}
```

The following example shows the workflow to redistribute spare capacity among nodes sharing the storage pool
Step 1: Check the current spare capacity distribution of the pool.

```
# The API:
/api/storage/pools

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools/f3aafdc6-be35-4d93-9590-
5a402bffbe4b?fields=capacity.spare_allocation_units" -H "accept:
application/json"

# The response:
{
"uuid": "f3aafdc6-be35-4d93-9590-5a402bffbe4b",
"name": "sp1",
"capacity": {
    "spare_allocation_units": [
    {
      "node": {
        "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
        "name": "node-1",
      },
      "count": 1,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 1846542336
    },
    {
      "node": {
        "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
        "name": "node-2",
      },
      "count": 0,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 0
    }
    ],
}
}
```

Step 2: Update the pool so that the spare allocation unit count is symmetrically modified for each node. The response to PATCH is a job unless the request is invalid.

```
# The API:
/api/storage/pools

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/pools/f3aafdc6-be35-4d93-
9590-5a402bffbe4b" -H "accept: application/hal+json" -d '{ "capacity" : {
"spare_allocation_units": [{"node": {"name": "node-1"}, "count":0},
{"node": {"name": "node-2"}, "count": 1}]}}'

# The response:
{
"job": {
  "uuid": "6b7ab28e-168d-11ea-8a50-0050568eca76",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6b7ab28e-168d-11ea-8a50-0050568eca76"
    }
  }
}
}
```

Step 3: Wait for the job to finish, then call GET to see the reflected change.

```
# The API:
/api/storage/pools

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/pools/f3aafdc6-be35-4d93-9590-
5a402bffbe4b?fields=capacity.spare_allocation_units" -H "accept:
application/json"

# The response:
{
"uuid": "f3aafdc6-be35-4d93-9590-5a402bffbe4b",
"name": "sp1",
"capacity": {
    "spare_allocation_units": [
    {
      "node": {
        "uuid": "caf95bec-f801-11e8-8af9-005056bbe5c1",
        "name": "node-1",
      },
      "count": 0,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 0
    },
    {
      "node": {
        "uuid": "cf9ab500-ff3e-4bce-bfd7-d679e6078f47",
        "name": "node-2",
      },
      "count": 1,
      "syncmirror_pool": "pool0",
      "size": 1846542336,
      "available_size": 1846542336
    }
    ],
}
}
```

Delete a storage pool specified by the UUID

DELETE `/storage/pools/{uuid}`

Introduced In: 9.11

Deletes the storage pool specified by the UUID. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage pool delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Storage Pool UUID.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11209668	Capacity from pool is being used by one or more aggregates.
11209670	Unable to stop sharing a constituent disk of the storage pool.
11209671	Cannot find a node sharing this storage pool.
11209672	Disk is not shared.
11209673	Unable to assign shared capacity from a constituent disk.
11209675	A constituent disk of the storage pool has non-spare capacity.
11209676	A constituent disk of the storage pool is reserved for coredump.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a storage pool specified by the UUID

GET `/storage/pools/{uuid}`

Introduced In: 9.11

Retrieves the storage pool specified by the UUID.

Related ONTAP commands

- `storage pool show -storage-pool-uuid`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Storage pool UUID.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
capacity	capacity	
health	health	Properties that outline shared storage pool health.
name	string	Storage pool name.
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "capacity": {
    "disks": [
      {
        "disk": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "1.0.1"
        },
        "total_size": 0,
        "usable_size": 0
      }
    ],
    "remaining": 0,
    "spare_allocation_units": [
      {
        "available_size": 0,
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "size": 0,
        "syncmirror_pool": "string"
      }
    ],
    "total": 0,
    "used_allocation_units": [
      {
        "aggregate": {
          "_links": {
            "self": {
```

```
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "current_usage": 0,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ]
},
"health": {
  "state": "string",
  "unhealthy_reason": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  }
},
"name": "string",
"nodes": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"storage_type": "string",
"uuid": "string"
```

```
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11206662	There is no storage pool matching the specified UUID or name.
11215856	The specified storage pool is not healthy.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

disk

Reference to the constituent disk object.

Name	Type	Description
_links	_links	
name	string	

storage_pool_disk

Name	Type	Description
disk	disk	Reference to the constituent disk object.
total_size	integer	Raw capacity of the disk, in bytes.
usable_size	integer	Usable capacity of this disk, in bytes.

node

Specifies what node can use this set of allocation units.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pool_spare_allocation_unit

Name	Type	Description
available_size	integer	The usable capacity of this set of allocation units.
count	integer	The number of spare allocation units on this node.
node	node	Specifies what node can use this set of allocation units.
size	integer	Size of each allocation unit.
syncmirror_pool	string	The RAID SyncMirror Pool to which this allocation unit is assigned.

aggregate

The aggregate that is using this cache capacity.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

node

The node hosting the aggregate using this set of allocation units.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_pool_used_allocation_unit

Name	Type	Description
aggregate	aggregate	The aggregate that is using this cache capacity.
count	integer	The number of allocation units used by this aggregate.

Name	Type	Description
current_usage	integer	The amount of cache space used by this aggregate.
node	node	The node hosting the aggregate using this set of allocation units.

capacity

Name	Type	Description
disk_count	integer	The number of disks in the storage pool.
disks	array[storage_pool_disk]	Properties of each disk used in the shared storage pool.
remaining	integer	Remaining usable capacity in the flash pool, in bytes.
spare_allocation_units	array[storage_pool_spare_allocation_unit]	Properties of spare allocation units.
total	integer	Total size of the flash pool, in bytes.
used_allocation_units	array[storage_pool_used_allocation_unit]	Information about the storage pool allocation units participating in the cache tier of an aggregate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message

health

Properties that outline shared storage pool health.

Name	Type	Description
is_healthy	boolean	Indicates whether the storage pool is able to participate in provisioning operations.
state	string	The state of the shared storage pool.
unhealthy_reason	error	Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a storage pool specified by the UUID

PATCH `/storage/pools/{uuid}`

Introduced In: 9.11

Updates the storage pool specified by the UUID with the properties in the body. This request starts a job and returns a link to that job.

Related ONTAP commands

- `storage pool rename`
- `storage pool reassign`
- `storage pool add`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Storage pool UUID.
simulate	boolean	query	False	When set to "true" in conjunction with a PATCH on "capacity.disk_count ", the end point returns a simulated layout of the storage pool with the additional disks, without changing system state. • Introduced in: 9.12

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
capacity	capacity	
name	string	Storage pool name.
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

Example request


```
{
  "capacity": {
    "disks": [
      {
        "disk": {
          "name": "1.0.1"
        },
        "total_size": 0,
        "usable_size": 0
      }
    ],
    "remaining": 0,
    "spare_allocation_units": [
      {
        "available_size": 0,
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "size": 0,
        "syncmirror_pool": "string"
      }
    ],
    "total": 0,
    "used_allocation_units": [
      {
        "aggregate": {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "current_usage": 0,
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ]
  },
  "name": "string",
  "nodes": [
    {
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
```

```
  ],
  "storage_type": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	
num_records	integer	Number of shared storage pools in the cluster.
records	array[storage_pool]	

Example response


```
{
  "job": {
    "uuid": "string"
  },
  "num_records": 1,
  "records": [
    {
      "capacity": {
        "disks": [
          {
            "disk": {
              "name": "1.0.1"
            },
            "total_size": 0,
            "usable_size": 0
          }
        ],
        "remaining": 0,
        "spare_allocation_units": [
          {
            "available_size": 0,
            "node": {
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "size": 0,
            "syncmirror_pool": "string"
          }
        ],
        "total": 0,
        "used_allocation_units": [
          {
            "aggregate": {
              "name": "aggr1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "current_usage": 0,
            "node": {
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ]
      },
```

```
      "name": "string",
      "nodes": [
        {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "storage_type": "string",
      "uuid": "string"
    }
  ]
}
```


Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11211658	Node does not have enough spare capacity.
11211659	Valid allocation unit input is required.
11211662	Specified node is not part of the storage pool.
11211663	Failed to reassign available capacity in the storage pool.
11211664	Could not fix the broken allocation unit for the storage pool.
11212673	Could not grow one or more aggregates.
11212679	Adding specified number of disks will expand storage pool beyond maximum supported disk limit.
11212680	Incorrect node specified.
11212681	0 is an invalid value for disk_count.

Error Code	Description
11212682	Adding the specified number of disks will result in the storage pool reaching the maximum disk limit reserved for RAID-TEC use only. At this limit, the storage pool can only allocate capacity to aggregates containing RAID-TEC RAID groups. Existing aggregates containing RAID groups other than RAID-TEC will not automatically grow to the new capacity.
11212683	Renaming storage pool to new name failed.
11212763	Storage pool add job failed.
11215657	Storage pool PATCH request have missing parameters.
11215658	Storage pool PATCH request for reassign is invalid.
11215659	Storage pool PATCH request for reassign have invalid allocation unit count.
11215660	Storage pool PATCH request for reassign have invalid node name.
11215662	Storage pool PATCH request have invalid disk count.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

disk

Reference to the constituent disk object.

Name	Type	Description
name	string	

storage_pool_disk

Name	Type	Description
disk	disk	Reference to the constituent disk object.
total_size	integer	Raw capacity of the disk, in bytes.
usable_size	integer	Usable capacity of this disk, in bytes.

node

Specifies what node can use this set of allocation units.

Name	Type	Description
name	string	
uuid	string	

storage_pool_spare_allocation_unit

Name	Type	Description
available_size	integer	The usable capacity of this set of allocation units.
count	integer	The number of spare allocation units on this node.

Name	Type	Description
node	node	Specifies what node can use this set of allocation units.
size	integer	Size of each allocation unit.
syncmirror_pool	string	The RAID SyncMirror Pool to which this allocation unit is assigned.

aggregate

The aggregate that is using this cache capacity.

Name	Type	Description
name	string	
uuid	string	

node

The node hosting the aggregate using this set of allocation units.

Name	Type	Description
name	string	
uuid	string	

storage_pool_used_allocation_unit

Name	Type	Description
aggregate	aggregate	The aggregate that is using this cache capacity.
count	integer	The number of allocation units used by this aggregate.
current_usage	integer	The amount of cache space used by this aggregate.
node	node	The node hosting the aggregate using this set of allocation units.

capacity

Name	Type	Description
disk_count	integer	The number of disks in the storage pool.
disks	array[storage_pool_disk]	Properties of each disk used in the shared storage pool.
remaining	integer	Remaining usable capacity in the flash pool, in bytes.
spare_allocation_units	array[storage_pool_spare_allocation_unit]	Properties of spare allocation units.
total	integer	Total size of the flash pool, in bytes.
used_allocation_units	array[storage_pool_used_allocation_unit]	Information about the storage pool allocation units participating in the cache tier of an aggregate.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Indicates why the storage pool is unhealthy. This property is not returned for healthy storage pools.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

health

Properties that outline shared storage pool health.

Name	Type	Description
is_healthy	boolean	Indicates whether the storage pool is able to participate in provisioning operations.
state	string	The state of the shared storage pool.

node_reference

Name	Type	Description
name	string	
uuid	string	

storage_pool

Name	Type	Description
capacity	capacity	
name	string	Storage pool name.
nodes	array[node_reference]	Nodes that can use this storage pool for their aggregates.
storage_type	string	Storage type for the disks used to create the storage pool.
uuid	string	Storage pool UUID.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage ports

Storage ports endpoint overview

Retrieving storage port information

The storage port GET API retrieves all of the storage ports in the cluster.

Examples

1) Retrieve a list of storage ports from the cluster

The following example shows the response with a list of storage ports in the cluster:

```
# The API:
/api/storage/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/ports" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0a",
```

```
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0a"
      }
    }
  },
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0b",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0b"
      }
    }
  },
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0c",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0c"
      }
    }
  },
  {
```

```
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0d",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0d"
      }
    }
  },
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0e",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0e"
      }
    }
  },
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
```

```
      }
    },
    "name": "0f",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0f"
      }
    }
  },
  {
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "name": "0g",
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0g"
      }
    }
  },
],
"num_records": 7,
"_links": {
  "self": {
    "href": "/api/storage/ports"
  }
}
}
```


2) Retrieve a specific storage port from the cluster

The following example shows the response of the requested storage port. If there is no storage port with the requested node uuid and name, an error is returned.

```
# The API:
/api/storage/ports/{node.uuid}/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0a" -H "accept: application/hal+json"

# The response:
{
"node": {
  "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
  "name": "node-1",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-00a0985a72ee"
    }
  }
},
"name": "0a",
"description": "SAS Host Adapter 0a (PMC-Sierra PM8001 rev. C)",
"wwn": "500a098003633df0",
"speed": 6,
"cable": {
  "part_number": "112-00429+A0",
  "serial_number": "629230774",
  "identifier": "500a0980066e2c01-500a098003633df0",
  "length": "0.5m",
  "vendor": "Molex Inc.",
  "transceiver": "mini_sas_hd"
},
"state": "online",
"enabled": true,
"firmware_version": "01.12.09.00",
"type": "sas",
"redundant": true,
"in_use": true,
"_links": {
  "self": {
    "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-00a0985a72ee/0a"
  }
}
}
```

Updating a storage port

The storage port PATCH API modifies the port mode for storage/network use and allows the port to be enabled/disabled.

Examples

1) Using an Ethernet port for storage

The following example sets an Ethernet port mode for storage use:

```
# The API:
/api/storage/ports/{node.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/ports/0530d6c1-8c6d-11e8-
907f-00a0985a72ee/e3a" -H "accept: application/hal+json" -H "Content-Type:
application/hal_json" -d '{"mode": "storage"}'

# The response:
{
}
```

---

2) Disabling a storage port

The following example disables an unused storage port:

```
# The API:
/api/storage/ports/{node.uuid}/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/ports/0530d6c1-8c6d-11e8-
907f-00a0985a72ee/e3a" -H "accept: application/hal+json" -H "Content-Type:
application/hal_json" -d '{"enabled": "false"}'

# The response:
{
}
```

Retrieve storage ports

GET `/storage/ports`

Introduced In: 9.6

Retrieves a collection of storage ports.

Related ONTAP commands

- `storage port show`

Learn more

- DOC /storage/ports

Parameters

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled • Introduced in: 9.9
type	string	query	False	Filter by type • Introduced in: 9.9
wwpn	string	query	False	Filter by wwpn • Introduced in: 9.9
in_use	boolean	query	False	Filter by in_use • Introduced in: 9.9
description	string	query	False	Filter by description
mac_address	string	query	False	Filter by mac_address
firmware_version	string	query	False	Filter by firmware_version • Introduced in: 9.9

Name	Type	In	Required	Description
error.message	string	query	False	Filter by error.message
error.corrective_action	string	query	False	Filter by error.corrective_action
name	string	query	False	Filter by name
speed	number	query	False	Filter by speed
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
cable.identifier	string	query	False	Filter by cable.identifier
cable.transceiver	string	query	False	Filter by cable.transceiver • Introduced in: 9.15
cable.part_number	string	query	False	Filter by cable.part_number
cable.vendor	string	query	False	Filter by cable.vendor • Introduced in: 9.15
cable.serial_number	string	query	False	Filter by cable.serial_number
cable.length	string	query	False	Filter by cable.length
wwn	string	query	False	Filter by wwn
redundant	boolean	query	False	Filter by redundant • Introduced in: 9.9

Name	Type	In	Required	Description
mode	string	query	False	Filter by mode • Introduced in: 9.8
serial_number	string	query	False	Filter by serial_number
state	string	query	False	Filter by state
board_name	string	query	False	Filter by board_name
part_number	string	query	False	Filter by part_number
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[storage_port]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "board_name": "string",
      "cable": {
        "identifier": "500a0980000b6c3f-50000d1703544b80",
        "length": "2m",
        "part_number": "112-00431+A0",
        "serial_number": 616930439,
        "transceiver": "mini_sas_hd",
        "vendor": "Molex Inc."
      },
      "description": "SAS Host Adapter 2a (PMC-Sierra PM8072 rev. C)",
      "error": {
        "corrective_action": "string",
        "message": "string"
      },
      "firmware_version": "03.08.09.00",
      "mac_address": "string",
      "mode": "storage",
      "name": "2a",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "part_number": "111-03801",
      "serial_number": "7A2463CC45B",
      "speed": 6,
      "state": "online",
      "type": "sas",
```

```
      "wwn": "50000d1703544b80",
      "wwpn": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	
transceiver	string	
vendor	string	

error

Name	Type	Description
corrective_action	string	Error corrective action
message	string	Error message

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

storage_port

Name	Type	Description
board_name	string	
cable	cable	
description	string	
enabled	boolean	
error	error	
firmware_version	string	
force	boolean	
in_use	boolean	Specifies whether any devices are connected through this port
mac_address	string	
mode	string	Operational mode of a non-dedicated Ethernet port
name	string	
node	node	
part_number	string	
redundant	boolean	Specifies whether all devices connected through this port have a redundant path from another port
serial_number	string	
speed	number	Operational port speed in Gbps
state	string	
type	string	
wwn	string	World Wide Name
wwpn	string	World Wide Port Name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a storage port

GET `/storage/ports/{node.uuid}/{name}`

Introduced In: 9.6

Retrieves a specific storage port.

Related ONTAP commands

- `storage port show`

Learn more

- DOC /storage/ports

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
name	string	path	True	Port name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
board_name	string	

Name	Type	Description
cable	cable	
description	string	
enabled	boolean	
error	error	
firmware_version	string	
force	boolean	
in_use	boolean	Specifies whether any devices are connected through this port
mac_address	string	
mode	string	Operational mode of a non-dedicated Ethernet port
name	string	
node	node	
part_number	string	
redundant	boolean	Specifies whether all devices connected through this port have a redundant path from another port
serial_number	string	
speed	number	Operational port speed in Gbps
state	string	
type	string	
wwn	string	World Wide Name
wwpn	string	World Wide Port Name

Example response


```
{
  "board_name": "string",
  "cable": {
    "identifier": "500a0980000b6c3f-50000d1703544b80",
    "length": "2m",
    "part_number": "112-00431+A0",
    "serial_number": 616930439,
    "transceiver": "mini_sas_hd",
    "vendor": "Molex Inc."
  },
  "description": "SAS Host Adapter 2a (PMC-Sierra PM8072 rev. C)",
  "error": {
    "corrective_action": "string",
    "message": "string"
  },
  "firmware_version": "03.08.09.00",
  "mac_address": "string",
  "mode": "storage",
  "name": "2a",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "part_number": "111-03801",
  "serial_number": "7A2463CC45B",
  "speed": 6,
  "state": "online",
  "type": "sas",
  "wwn": "50000d1703544b80",
  "wwpn": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	
transceiver	string	
vendor	string	

error

Name	Type	Description
corrective_action	string	Error corrective action
message	string	Error message

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a storage port

PATCH `/storage/ports/{node.uuid}/{name}`

Introduced In: 9.11

Updates a storage port.

Related ONTAP commands

- `storage port modify`
- `storage port enable`
- `storage port disable`

Learn more

- DOC /storage/ports

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
name	string	path	True	Port name

Request Body

Name	Type	Description
board_name	string	

Name	Type	Description
cable	cable	
description	string	
enabled	boolean	
error	error	
firmware_version	string	
force	boolean	
in_use	boolean	Specifies whether any devices are connected through this port
mac_address	string	
mode	string	Operational mode of a non-dedicated Ethernet port
name	string	
node	node	
part_number	string	
redundant	boolean	Specifies whether all devices connected through this port have a redundant path from another port
serial_number	string	
speed	number	Operational port speed in Gbps
state	string	
type	string	
wwn	string	World Wide Name
wwpn	string	World Wide Port Name

Example request

```
{
  "board_name": "string",
  "cable": {
    "identifier": "500a0980000b6c3f-50000d1703544b80",
    "length": "2m",
    "part_number": "112-00431+A0",
    "serial_number": 616930439,
    "transceiver": "mini_sas_hd",
    "vendor": "Molex Inc."
  },
  "description": "SAS Host Adapter 2a (PMC-Sierra PM8072 rev. C)",
  "error": {
    "corrective_action": "string",
    "message": "string"
  },
  "firmware_version": "03.08.09.00",
  "mac_address": "string",
  "mode": "storage",
  "name": "2a",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "part_number": "111-03801",
  "serial_number": "7A2463CC45B",
  "speed": 6,
  "state": "online",
  "type": "sas",
  "wwn": "50000d1703544b80",
  "wwpn": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
17891328	Port operation "<operation>\" failed on port \"<name>\". This might indicate a hardware error, an illegal request, or an aborted command.</name></operation>
17891329	Port "<name>\" is invalid.</name>
17891330	Port operation "<operation>\" failed on port \"<port>\" because it is not supported on this port type.</port></operation>
17891331	Cannot complete operation on port "<port>\". The status of the port is not available.</port>
17891332	Port operation "<operation>\" failed on port \"<port>\". The port is not offline.</port></operation>
17891333	Port operation "<operation>\" failed on port \"<port>\". The port is already offline.</port></operation>
17891334	Port operation "<operation>\" failed on port \"<port>\". One or more devices on the port is currently being sanitized.</port></operation>
17891338	Device operation "<operation>\" failed on port \"<name>\". Some devices can only be accessed through this port. Disabling this port might cause multiple device failures.</name></operation>
17891339	Device operation "<operation>\" failed on port \"<name>\". Some devices can only be accessed through this port. Disabling this port might cause multiple device failures. Use the \"-force\" parameter to ignore checks and <operation>the port.</operation></name></operation>
17891344	Device operation "<operation>\" failed on port \"<name>\" because the port is in use.</name></operation>
17891345	Device operation "<operation>\" failed on port \"<name>\" because the port is in use. Use the \"-force\" parameter to ignore checks and <operation>the port.</operation></name></operation>
17891346	Port "<name>\" is already enabled.</name>
17891347	Port "<name>\" is already disabled.</name>
17891350	Port "<name>\" is not a valid storage Ethernet port.</name>
17891350	Port "<port>\" is not a valid storage Ethernet port.</port>

Error Code	Description
17891352	Port operation "<operation>\" failed on port \"<name>\". Reboot node \"<node>\" to recover.</node></name></operation>
17891353	Unable to enable port "<port>\" because it is in network mode.</port>
17891354	Unable to disable port "<port>\" because it is in network mode.</port>
17891355	Port operation "<operation>\" failed on port \"<name>\" because it is not supported on dedicated ports.</name></operation>
17891356	Unable to <operation>port \"<port>\" when setting mode to \"<mode>\".</mode></port></operation>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	
transceiver	string	
vendor	string	

error

Name	Type	Description
corrective_action	string	Error corrective action
message	string	Error message

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

storage_port

Name	Type	Description
board_name	string	
cable	cable	
description	string	
enabled	boolean	
error	error	
firmware_version	string	

Name	Type	Description
force	boolean	
in_use	boolean	Specifies whether any devices are connected through this port
mac_address	string	
mode	string	Operational mode of a non-dedicated Ethernet port
name	string	
node	node	
part_number	string	
redundant	boolean	Specifies whether all devices connected through this port have a redundant path from another port
serial_number	string	
speed	number	Operational port speed in Gbps
state	string	
type	string	
wwn	string	World Wide Name
wwpn	string	World Wide Port Name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage QoS policies

Storage Qos policies endpoint overview

Quality of Service Configuration

A QoS policy defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy is associated. There are two types of policies that can be configured: fixed, which defines a fixed SLO, or adaptive which defines a variable SLO for a storage object. Adaptive policies vary the SLO depending on the space usage of the storage object. A policy can be either a fixed policy or an adaptive one, not both.

Service level objectives include minimum and maximum limits on throughput in terms of IOPS. Only maximum limits can be set in terms of both IOPS and/or throughput (MB/s). A QoS policy can be used to enforce SLOs for multiple storage objects by specifying "capacity_shared" to true. For example, if a QoS policy with "capacity_shared" is set to true and it has maximum_throughput_iops set to 1000, and this policy is assigned to four volumes, then the combined throughput of all four volumes is limited to 1000 IOPS. If "capacity_shared" is set to false then, each storage object will have it’s SLOs enforced individually. For example, in the previous case if the same policy was applied to four volumes but with "capacity_shared" set to false, then each of the volumes would be limited to 1000 IOPS individually. Once "capacity_shared" is set, it cannot be modified.

Adaptive parameters can specify the variable SLOs in terms of IOPS/TB. The actual IOPS enforced on the storage object can be calculated using the allocated space on the storage object. The policies are enforced individually amongst storage objects.

Examples

1) Create a fixed QoS policy

The following example shows how to create a fixed QoS policy to limit throughput for a storage object between 5000 IOPS and 10000 IOPS which has capacity_shared set to false. This QoS policy can be used as a template to apply on multiple storage objects to provide individual SLOs to each object.
+

```
curl -X POST
"https://172.21.69.245/api/storage/qos/policies?return_timeout=0" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"fixed\": { \"capacity_shared\": false, \"max_throughput_iops\": 10000,
\"min_throughput_iops\": 5000 }, \"name\":
\"qos_policy_5000_to_10000_iops\", \"svm\": { \"name\": \"vs0\" }}"
```

2) Create an adaptive QoS policy

The following example shows how to create an adaptive QoS policy which provides 5000 IOPS per GB of allocated space for a storage object with a peak of 6000 IOPS. Minimum IOPS regardless of allocated space are 1000 IOPS.
+

```
curl -X POST
"https://172.21.69.245/api/storage/qos/policies?return_timeout=0" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"adaptive\": { \"absolute_min_iops\": 1000, \"expected_iops\": 5000,
\"expected_iops_allocation\": \"used_space\", \"peak_iops\": 6000,
\"peak_iops_allocation\": \"allocated_space\" }, \"name\":
\"adaptive_pg_5k_to_6k\", \"svm\": { \"name\": \"vs0\" }}"
```

-

3) Update an existing QoS policy

The following example shows how to update SLOs of an existing QoS policy and also rename it.
+

```
curl -X PATCH "https://172.21.69.245/api/storage/qos/policies/d38bafc0-
5a51-11e9-bd5b-005056ac6f1f?return_timeout=0" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"fixed\": {
\"max_throughput_iops\": 15000, \"min_throughput_iops\": 10000 },
\"name\": \"qos_policy_10k_to_15k_iops\"}"
```

4) Delete an existing QoS policy

When a QoS policy is deleted any associations of the policy with a storage objects are also removed.
+

```
curl -X DELETE "https://172.21.69.245/api/storage/qos/policies/d38bafc0-
5a51-11e9-bd5b-005056ac6f1f?return_timeout=0" -H "accept:
application/json"
```

Retrieve QoS policies

GET `/storage/qos/policies`

Introduced In: 9.6

Retrieves a collection of QoS policies.

Parameters

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope • Introduced in: 9.11
name	string	query	False	Filter by name
pgid	integer	query	False	Filter by pgid • Introduced in: 9.10
fixed.max_throughput_mbps	integer	query	False	Filter by fixed.max_throughput_mbps • Max value: 4194303 • Min value: 0
fixed.max_throughput_iops	integer	query	False	Filter by fixed.max_throughput_iops • Max value: 2147483647 • Min value: 0
fixed.capacity_shared	boolean	query	False	Filter by fixed.capacity_shared

Name	Type	In	Required	Description
fixed.min_throughput_mbps	integer	query	False	Filter by fixed.min_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
fixed.min_throughput	string	query	False	Filter by fixed.min_throughput • Introduced in: 9.17
fixed.max_throughput	string	query	False	Filter by fixed.max_throughput • Introduced in: 9.17
fixed.min_throughput_iops	integer	query	False	Filter by fixed.min_throughput_iops • Max value: 2147483647 • Min value: 0
adaptive.absolute_min_iops	integer	query	False	Filter by adaptive.absolute_min_iops
adaptive.expected_iops	integer	query	False	Filter by adaptive.expected_iops
adaptive.peak_iops_allocation	string	query	False	Filter by adaptive.peak_iops_allocation • Introduced in: 9.10

Name	Type	In	Required	Description
adaptive.expected_iops_allocation	string	query	False	Filter by adaptive.expected_iops_allocation • Introduced in: 9.10
adaptive.peak_iops	integer	query	False	Filter by adaptive.peak_iops
adaptive.block_size	string	query	False	Filter by adaptive.block_size • Introduced in: 9.10
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
policy_class	string	query	False	Filter by policy_class • Introduced in: 9.10
uuid	string	query	False	Filter by uuid
object_count	integer	query	False	Filter by object_count
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[qos_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "adaptive": {
        "block_size": "string",
        "expected_iops_allocation": "string",
        "peak_iops_allocation": "string"
      },
      "fixed": {
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput": [
          "900KB/s",
```

```
            "500MB/s",
            "120GB/s",
            "5000IOPS",
            "5000IOPS,500KB/s",
            "2500IOPS,100MB/s",
            "1000IOPS,25MB/s"
          ]
        },
        "name": "extreme",
        "object_count": 0,
        "pgid": 0,
        "policy_class": "string",
        "scope": "string",
        "svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.

Name	Type	Description
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
_links	_links	
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create a QoS policy

POST `/storage/qos/policies`

Introduced In: 9.6

Creates a QoS policy.

Required properties

- `svm.uuid` or `svm.name` - The existing SVM owning the QoS policy.
- `name` - The name of the QoS policy.
- `fixed.*` or `adaptive.*` - Either of the fixed or adaptive parameters.

Default property values

- If `fixed.*` parameters are specified, then capacity.shared is set to false by default.

Related ONTAP commands

- `qos policy-group create`
- `qos adaptive-policy-group create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.

Name	Type	Description
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8454147	The maximum limit for QoS policies has been reached.
8454154	The name specified for creating conflicts with an existing QoS policy name.
8454194	The minimum throughput value for the policy group must be less than or equal to the maximum throughput value.
8454260	Invalid value for maximum and minimum fields. Valid values for max_throughput_iops and max_throughput_mbps combination is for the ratio of max_throughput_mbps and max_throughput_iops to be within 1 to 4096.

Error Code	Description
8454273	Invalid value for an adaptive field. Value should be non-zero.
8454274	Invalid value for an adaptive field. Value for expected_iops must be less than or equal to the value for peak_iops.
8454277	The name specified for creating an adaptive QoS policy conflicts with an existing fixed QoS policy name.
8454278	The name specified for creating a fixed QoS policy conflicts with an existing adaptive QoS policy name.
8454379	The name specified for creating a fixed QoS policy already exists.
8454380	The name specified for creating an adaptive QoS policy already exists.
8454389	One specified field cannot be used in combination with at least one other specified field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.

Name	Type	Description
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a QoS policy

DELETE `/storage/qos/policies/{uuid}`

Introduced In: 9.6

Deletes a QoS policy. All QoS workloads associated with the policy are removed.

Related ONTAP commands

- `qos policy-group delete`
- `qos adaptive-policy-group delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8454286	Modifications to these cluster-scoped preset policies is prohibited.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a QoS policy

GET `/storage/qos/policies/{uuid}`

Introduced In: 9.6

Retrieves a specific QoS policy.

Related ONTAP commands

- `qos policy-group show`
- `qos adaptive-policy-group show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
```

```
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.

Name	Type	Description
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a QoS policy

PATCH `/storage/qos/policies/{uuid}`

Introduced In: 9.6

Update a specific QoS policy.

Related ONTAP commands

- `qos policy-group modify`
- `qos adaptive-policy-group modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "capacity_shared": true,
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8454147	The maximum limit for QoS policies has been reached.
8454154	The name specified for creating conflicts with an existing QoS policy name.
8454194	The minimum throughput value for the policy group must be less than or equal to the maximum throughput value.
8454260	Invalid value for maximum and minimum fields. Valid values for max_throughput_iops and max_throughput_mbps combination is for the ratio of max_throughput_mbps and max_throughput_iops to be within 1 to 4096.
8454273	Invalid value for an adaptive field. Value should be non-zero.

Error Code	Description
8454277	The name specified for creating an adaptive QoS policy conflicts with an existing fixed QoS policy name.
8454278	The name specified for creating a fixed QoS policy conflicts with an existing adaptive QoS policy name.
8454286	Modifications on these cluster scoped preset policies is prohibited.
8454327	The existing fixed QoS policy cannot be modified to an adaptive QoS policy.
8454328	The existing adaptive QoS policy cannot be modified to a fixed QoS policy.
8454379	The name specified for creating a fixed QoS policy already exists.
8454380	The name specified for creating an adaptive QoS policy already exists.
8454389	One specified field cannot be used in combination with at least one other specified field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage QoS options

Storage Qos qos-options endpoint overview

Quality of Service Options

A QoS option represents a configuration detail that is used by QoS.
+

Examples

Retrieving a QoS option from the cluster

The following example retrieves the QoS option in the cluster.
+

```
curl -X GET "https://<mgmt-ip>/api/storage/qos/qos-
options?return_timeout=0" -H "accept: application/json" -H "Content-Type:
application/json"
```

---

2) Update a QoS option

The following example shows how to modify the background task reserve policy to 40%.
+

```
curl -X PATCH "https://<mgmt-ip>/api/storage/qos/qos-
options?return_timeout=0" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"background_task_reserve\": 40 }"
```

-

Retrieve QoS options

GET `/storage/qos/qos-options`

Introduced In: 9.14

Retrieves QoS options.
This option is available only at diagnostic privilege level and above.

Related ONTAP commands

- `qos settings cluster-options show`

Parameters

Name	Type	In	Required	Description
background_task_reserve	integer	query	False	Filter by background_task_reserve
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
background_task_reserve	integer	Percentage reserve for critical background tasks.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "background_task_reserve": 33
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a QoS option

PATCH `/storage/qos/qos-options`

Introduced In: 9.14

Update a specific QoS option.
This option is available only at diagnostic privilege level and above.

Related ONTAP commands

- `qos settings cluster-options modify`

Request Body

Name	Type	Description
background_task_reserve	integer	Percentage reserve for critical background tasks.

Example request

```
{
  "background_task_reserve": 33
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8454377	This command is not supported on this platform.
8454378	Unsupported value specified for background-task-reserve. Supported values are 0 to 99.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

qos_option

Name	Type	Description
background_task_reserve	integer	Percentage reserve for critical background tasks.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage QoS workloads

Storage Qos workloads endpoint overview

Quality of Service Workloads

A QoS workload represents a storage object that is tracked by QoS.
+

Examples

Retrieving a list of QoS workloads from the cluster

The following example retrieves all the workloads in the cluster.
+

```
curl -X GET "https://<mgmt-ip>/api/storage/qos/workloads" -H "accept:
application/hal+json"
```

Retrieving a specific QoS workload from the cluster

The following example retrieves a requested workload from the cluster.
+

```
curl -X GET "https://<mgmt-ip>/api/storage/qos/workloads/77b68b1c-a458-
11eb-baaa-005056bb873e" -H "accept: application/hal+json"
```

Retrieve QoS workloads

GET `/storage/qos/workloads`

Introduced In: 9.10

Retrieves a collection of QoS workloads.

Parameters

Name	Type	In	Required	Description
workload_class	string	query	False	Filter by workload_class
lun	string	query	False	Filter by lun
volume	string	query	False	Filter by volume
name	string	query	False	Filter by name
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
qtree	string	query	False	Filter by qtree
file	string	query	False	Filter by file
policy.uuid	string	query	False	Filter by policy.uuid
policy.name	string	query	False	Filter by policy.name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
wid	integer	query	False	Filter by wid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
error	error	
num_records	integer	Number of records
records	array[qos_workload]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "file": "string",
      "lun": "string",
      "name": "volume1-wid123",
      "policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "qtree": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
```

```
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
        "volume": "volume1",
        "wid": 123,
        "workload_class": "autovolume"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

policy

QoS policy group reference.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_workload

Name	Type	Description
_links	_links	
file	string	Name of the file.
lun	string	Name of the LUN. The name of the LUN will be displayed as "(unknown)" if the name cannot be retrieved.
name	string	Name of the QoS workload.
policy	policy	QoS policy group reference.
qtree	string	Name of the Qtree.
svm	svm	SVM, applies only to SVM-scoped objects.

Name	Type	Description
uuid	string	
volume	string	Name of the volume. The name of the volume will be displayed as "(unknown)" if the name cannot be retrieved.
wid	integer	Workload ID of the QoS workload.
workload_class	string	Class of the QoS workload.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a QoS workload

GET `/storage/qos/workloads/{uuid}`

Introduced In: 9.10

Retrieves a specific QoS workload.

Related ONTAP command

- `qos workload show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
file	string	Name of the file.
lun	string	Name of the LUN. The name of the LUN will be displayed as "(unknown)" if the name cannot be retrieved.
name	string	Name of the QoS workload.
policy	policy	QoS policy group reference.
qtree	string	Name of the Qtree.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	
volume	string	Name of the volume. The name of the volume will be displayed as "(unknown)" if the name cannot be retrieved.
wid	integer	Workload ID of the QoS workload.
workload_class	string	Class of the QoS workload.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "file": "string",
  "lun": "string",
  "name": "volume1-wid123",
  "policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "qtree": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "volume": "volume1",
  "wid": 123,
  "workload_class": "autovolume"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

policy

QoS policy group reference.

Name	Type	Description
_links	_links	
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage qtrees

Storage qtrees endpoint overview

Overview

A qtree is a logically defined file system that can exist as a special subdirectory of the root directory within a FlexVol volume or a FlexGroup volume.

Qtree QoS policy

Qtree QoS policy and settings enforce Service Level Objectives (SLOs) on a qtree. SLOs can be set by specifying "qos_policy.max_throughput_iops" and/or "qos_policy.max_throughput_mbps" or "qos_policy.min_throughput_iops" and/or "qos_policy.min_throughput_mbps".
Specifying "min_throughput_iops" or "min_throughput_mbps" is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying "qos_policy.name" or "qos_policy.uuid" properties.
Setting or assigning a QoS policy to a qtree is not supported if its containing volume or SVM has a QoS policy attached, or a file or LUN in its containing volume already has a QoS policy attached.

Performance monitoring

Performance of a qtree can be monitored by observing the `statistics.*` properties. These properties show the performance of the qtree in terms of IOPS and throughput. The `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Extended performance monitoring

Extended performance monitoring enables the collection of latency statistics and the archival of statistics samples for a qtree. When extended performance monitoring is enabled for a qtree, its performance can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the

performance of the qtree in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.
Extended performance monitoring can be enabled for a qtree using the `ext_performance_monitoring.enabled` property. A maximum of 50,000 qtrees can have extended performance monitoring enabled on a cluster. If extended performance monitoring is enabled for an existing qtree, the prior `statistics.*` properties showing the IOPS and throughput performance of the qtree will be cleared.

When extended performance monitoring is enabled for a qtree for the first time in an SVM, existing NFS clients might not be accounted for until their NFS shares associated with the SVM are remounted.

Qtree APIs

The following APIs are used to create, retrieve, modify, and delete qtrees.

– POST /api/storage/qtrees

– GET /api/storage/qtrees

– GET /api/storage/qtrees/{volume-uuid}/{qtree-id}

– PATCH /api/storage/qtrees/{volume-uuid}/{qtree-id}

– DELETE /api/storage/qtrees/{volume-uuid}/{qtree-id}

Examples

Creating a qtree inside a volume for an SVM

This API is used to create a qtree inside a volume for an SVM.

The following example shows how to create a qtree in a FlexVol volume with a given security style, user, group, UNIX permissions, an export policy, and a QoS policy.

```
# The API:
POST /api/storage/qtrees

# The call:
curl -X POST 'https://<mgmt-ip>/api/storage/qtrees?return_records=true' -H
'accept: application/hal+json' -d @test_qtree_post.txt
test_qtree_post.txt(body):
{
"svm": {
  "name": "svm1"
},
"volume": {
  "name": "fv"
},
"name": "qt1",
```

```
"security_style": "unix",
"user": {
  "name": "unix_user1"
},
"group": {
  "name": "unix_group1"
},
"unix_permissions": 744,
"export_policy": {
    "name": "default"
},
"qos_policy": {
    "max_throughput_iops": 1000
}
}

# The response:
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1"
      },
      "volume": {
        "name": "fv"
      },
      "name": "qt1",
      "security_style": "unix",
      "user": {
        "name": "unix_user1"
      },
      "group": {
        "name": "unix_group1"
      },
      "unix_permissions": 744,
      "export_policy": {
        "name": "default"
      },
      "qos_policy": {
        "min_throughput_iops": 0,
        "min_throughput_mbps": 0,
        "max_throughput_iops": 1000,
        "max_throughput_mbps": 0,
        "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
        "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52"
```

```
      },
      "_links": {
        "self": {
          "href": "/api/storage/qtrees/?volume.name=fv&name=qt1"
        }
      }
    }
  ],
  "job": {
    "uuid": "84edef3c-4f6d-11e9-9a71-005056a7f717",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/84edef3c-4f6d-11e9-9a71-005056a7f717"
      }
    }
  }
}
```

Retrieving qtrees

This API is used to retrieve qtrees.

The following example shows how to retrieve qtrees belonging to SVM *svm1* and volume *fv*. The `svm.name` and `volume.name` query parameters are used to find the required qtrees.

```
# The API:
GET /api/storage/qtrees

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/qtrees/?svm.name=svm1&volume.name=fv" -H 'accept:
application/hal+json'

# The response
{
  "records": [
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
```

```
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "id": 0,
      "name": "",
      "_links": {
        "self": {
          "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-
005056a7f717/0"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "id": 1,
      "name": "qt1",
      "_links": {
        "self": {
```

```
          "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-
005056a7f717/1"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "id": 2,
      "name": "qt2",
      "_links": {
        "self": {
          "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-
005056a7f717/2"
        }
      }
    }
  ],
  "num_records": 3,
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/?svm.name=svm1&volume.name=fv"
    }
  }
}
```

Retrieving properties of a specific qtree using a qtree identifier

This API is used to retrieve properties of a specific qtree using qtree.id.

The following example shows how to use the qtree identifier to retrieve all properties of the qtree using the `fields` query parameter.

```
# The API:
GET /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-
005056a7f717/2?fields=*' -H 'accept: application/hal+json'
{
  "svm": {
    "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
      }
    }
  },
  "volume": {
    "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
    "name": "fv",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
      }
    }
  },
  "id": 2,
  "name": "qt2",
  "security_style": "unix",
  "user": {
    "name": "unix_user1"
  },
  "group": {
    "name": "unix_group1"
  },
  "unix_permissions": 744,
  "export_policy": {
    "name": "default",
```

```
    "id": 12884901889,
    "_links": {
      "self": {
        "href": "/api/protocols/nfs/export-policies/12884901889"
      }
    }
  },
  "qos_policy": {
    "min_throughput_iops": 0,
    "min_throughput_mbps": 0,
    "max_throughput_iops": 1000,
    "max_throughput_mbps": 0,
    "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
    "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52",
    "_links": {
      "self": {
        "href": "/api/storage/qos/policies/39ac471f-ff35-11e9-b0f9-
005056a7ab52"
      }
    }
  },
  "ext_performance_monitoring": {
    "enabled": false
  },
  "statistics": {
    "timestamp": "2019-04-09T05:50:42Z",
    "status": "ok",
    "iops_raw": {
      "read": 0,
      "write": 0,
      "other": 3,
      "total": 3
    },
    "throughput_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
  },
  "path": "/fv/qt2",
  "nas": {
    "path": "/fv/qt2",
  },
  "_links": {
    "self": {
```

```
      "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-005056a7f717/2"
    }
  }
}
```

Retrieving properties of a specific qtree using the qtree name

This API is used to retrieve properties of a specific qtree using "qtree.name".
The following example shows how to retrieve all of the properties belonging to qtree "qt2". The `svm.name` and `volume.name` query parameters are used here along with the qtree name.

```
# The API:
GET /api/storage/qtrees/

# The call:
curl -X GET 'https://<mgmt-
ip>/api/storage/qtrees/?svm.name=svm1&volume.name=fv&name=qt2&fields=*' -H
'accept: application/hal+json'
{
  "svm": {
    "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
      }
    }
  },
  "volume": {
    "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
    "name": "fv",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
      }
    }
  },
  "id": 2,
  "name": "qt2",
  "security_style": "unix",
  "user": {
    "name": "unix_user1"
```

```
  },
  "group": {
    "name": "unix_group1"
  },
  "unix_permissions": 744,
  "export_policy": {
    "name": "default",
    "id": 12884901889,
    "_links": {
      "self": {
        "href": "/api/protocols/nfs/export-policies/12884901889"
      }
    }
  },
  "qos_policy": {
    "min_throughput_iops": 0,
    "min_throughput_mbps": 0,
    "max_throughput_iops": 1000,
    "max_throughput_mbps": 0,
    "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab52",
    "name": "vs0_auto_gen_policy_39a9522f_ff35_11e9_b0f9_005056a7ab52",
    "_links": {
      "self": {
        "href": "/api/storage/qos/policies/39ac471f-ff35-11e9-b0f9-
005056a7ab52"
      }
    }
  },
  "ext_performance_monitoring": {
    "enabled": false
  },
  "statistics": {
    "timestamp": "2019-04-09T05:50:42Z",
    "status": "ok",
    "iops_raw": {
      "read": 0,
      "write": 0,
      "other": 3,
      "total": 3
    },
    "throughput_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
```

```
  },
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-005056a7f717/2"
    }
  }
}
```

Updating a qtree

This API is used to update a qtree.

The following example shows how to update properties in a qtree.

```
# The API:
PATCH /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-
9a71-005056a7f717/2' -H 'accept: application/hal+json' -d
'@test_qtree_patch.txt'
test_qtree_patch.txt(body):
{
"security_style": "mixed",
"user": {
  "name": "unix_user1"
},
"group": {
  "name": "unix_group1"
},
"unix_permissions": 777,
"export_policy": {
    "id": "9",
    "name": "exp1"
},
"qos_policy": {
    "uuid": "39ac471f-ff35-11e9-b0f9-005056a7ab53"
}
}
```

Renaming a qtree

This API is used to rename a qtree.

The following example below shows how to rename a qtree with a new name.

```
# The API:
PATCH /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-
9a71-005056a7f717/1' -H 'accept: application/hal+json' -d '{ "name":
"new_qt1" }'
```

Deleting a qtree inside a volume of an SVM

This API is used to delete a qtree inside a volume of an SVM.

The following example shows how to delete a qtree.

```
# The API:
DELETE /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-
9a71-005056a7f717/2" -H 'accept: application/hal+json'
```

Enabling extended performance monitoring on a qtree using PATCH

This API is used to enable extended performance monitoring on a qtree.

The following example shows how to enable extended performance monitoring on a qtree.

```
# The API:
PATCH /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-
9a71-005056a7f717/1" -H 'accept: application/hal+json' -d '{
"ext_performance_monitoring": { "enabled": "true" }}'
```

Disabling extended performance monitoring on a qtree using PATCH

This API is used to disable extended performance monitoring on a qtree.

The following example shows how to disable extended performance monitoring on a qtree.

```
# The API:
PATCH /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-
9a71-005056a7f717/1" -H 'accept: application/hal+json' -d '{
"ext_performance_monitoring": { "enabled": "false" }}'
```

Retrieving performance properties for a qtree which has extended performance monitoring enabled

The following example shows how to use a GET request to retrieve performance properties for a qtree which has extended performance monitoring enabled.

```
# The API:
GET /api/storage/qtrees/{volume.uuid}/{id}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-
005056a7f717/3?fields=ext_performance_monitoring,statistics,metric' -H
'accept: application/hal+json'
{
  "volume": {
    "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
    "name": "fv",
```

```
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
      }
    }
  },
  "id": 3,
  "name": "qt3",
  "ext_performance_monitoring": {
    "enabled": true
  },
  "statistics": {
    "timestamp": "2019-04-09T05:50:42Z",
    "status": "ok",
    "iops_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "throughput_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
    "latency_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
  },
  "metric": {
    "timestamp": "2019-04-09T05:50:00Z",
    "duration": "PT5M",
    "status": "ok",
    "iops": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "throughput": {
      "read": 0,
```

```
      "write": 0,
      "other": 0,
      "total": 0
    },
    "latency": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    }
  },
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/cb20da45-4f6b-11e9-9a71-005056a7f717/3"
    }
  }
}
```

Retrieve qtrees

GET `/storage/qtrees`

Introduced In: 9.6

Retrieves qtrees configured for all FlexVol volumes or FlexGroup volumes.

Use the `fields` query parameter to retrieve all properties of the qtree. If the `fields` query parameter is not used, then GET returns the qtree `name` and qtree `id` only.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `ext_performance_monitoring.enabled`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `qtree show`

Parameters

Name	Type	In	Required	Description
qos_policy.uuid	string	query	False	Filter by qos_policy.uuid • Introduced in: 9.8
qos_policy.min_throughput_iops	integer	query	False	Filter by qos_policy.min_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0
qos_policy.min_throughput_mbps	integer	query	False	Filter by qos_policy.min_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
qos_policy.max_throughput	string	query	False	Filter by qos_policy.max_throughput • Introduced in: 9.17
qos_policy.min_throughput	string	query	False	Filter by qos_policy.min_throughput • Introduced in: 9.17

Name	Type	In	Required	Description
qos_policy.max_throughput_iops	integer	query	False	Filter by qos_policy.max_throughput_iops • Introduced in: 9.8 • Max value: 2147483647 • Min value: 0
qos_policy.max_throughput_mbps	integer	query	False	Filter by qos_policy.max_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
qos_policy.name	string	query	False	Filter by qos_policy.name • Introduced in: 9.8
ext_performance_monitoring.enabled	boolean	query	False	Filter by ext_performance_monitoring.enabled • Introduced in: 9.16
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write • Introduced in: 9.8
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other • Introduced in: 9.8
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read • Introduced in: 9.16
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total • Introduced in: 9.16
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write • Introduced in: 9.16
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other • Introduced in: 9.16
group.id	string	query	False	Filter by group.id • Introduced in: 9.9
group.name	string	query	False	Filter by group.name • Introduced in: 9.9
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name

Name	Type	In	Required	Description
export_policy.id	integer	query	False	Filter by export_policy.id
export_policy.name	string	query	False	Filter by export_policy.name
unix_permissions	integer	query	False	Filter by unix_permissions
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
nas.path	string	query	False	Filter by nas.path • Introduced in: 9.9
path	string	query	False	Filter by path
id	integer	query	False	Filter by id • Max value: 4994 • Min value: 0
user.id	string	query	False	Filter by user.id • Introduced in: 9.9
user.name	string	query	False	Filter by user.name • Introduced in: 9.9
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.16
metric.latency.read	integer	query	False	Filter by metric.latency.read • Introduced in: 9.16

Name	Type	In	Required	Description
metric.latency.total	integer	query	False	Filter by metric.latency.total • Introduced in: 9.16
metric.latency.write	integer	query	False	Filter by metric.latency.write • Introduced in: 9.16
metric.latency.other	integer	query	False	Filter by metric.latency.other • Introduced in: 9.16
metric.throughput.read	integer	query	False	Filter by metric.throughput.read • Introduced in: 9.16
metric.throughput.total	integer	query	False	Filter by metric.throughput.total • Introduced in: 9.16
metric.throughput.write	integer	query	False	Filter by metric.throughput.write • Introduced in: 9.16
metric.throughput.other	integer	query	False	Filter by metric.throughput.other • Introduced in: 9.16

Name	Type	In	Required	Description
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.16
metric.iops.read	integer	query	False	Filter by metric.iops.read • Introduced in: 9.16
metric.iops.total	integer	query	False	Filter by metric.iops.total • Introduced in: 9.16
metric.iops.write	integer	query	False	Filter by metric.iops.write • Introduced in: 9.16
metric.iops.other	integer	query	False	Filter by metric.iops.other • Introduced in: 9.16
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.16
security_style	string	query	False	Filter by security_style
_tags	string	query	False	Filter by _tags • Introduced in: 9.13
name	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Max value: 120 • Min value: 0 • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[qtree]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "export_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 100,
        "name": "default"
      },
      "group": {
        "id": "20001",
        "name": "unix_group1"
      },
      "id": 1,
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT5M",
        "iops": {
          "read": 200,
```

```
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "name": "string",
      "nas": {
        "path": "/volume3/qtree1"
      },
      "path": "/volume3/qtree1",
      "qos_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "max_throughput_iops": 10000,
        "max_throughput_mbps": 500,
        "min_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
```

```
        ],
        "min_throughput_iops": 2000,
        "min_throughput_mbps": 500,
        "name": "performance",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "security_style": "string",
      "statistics": {
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "unix_permissions": 493,
      "user": {
        "id": "10001",
        "name": "unix_user1"
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918235	A volume with UUID was not found.
2621462	The specified SVM does not exist.
5242889	Failed to get the qtree from volume.
5242956	Failed to obtain qtree.
5242965	Invalid qtree path. The volume name component of the qtree path, must be the same as the volume specified with the parameter.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

export_policy

Export Policy

Name	Type	Description
_links	_links	
id	integer	
name	string	

ext_performance_monitoring

Name	Type	Description
enabled	boolean	Specifies whether extended performance monitoring is enabled for the qtree.

group

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the group that owns the qtree. Valid in POST or PATCH.

Name	Type	Description
name	string	Alphanumeric group name of group that owns the qtree. Valid in POST or PATCH.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

nas

Name	Type	Description
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH.

qos_policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
_links	_links	
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled with the next closest collection and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes does not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Required in POST

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the user who owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric username of user who owns the qtree. Valid in POST or PATCH.

volume

Required in POST

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

qtree

A qtree is a directory at the top level of a volume to which a custom export policy (for fine-grained access control) and a quota rule can be applied, if required.

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.

Name	Type	Description
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.
id	integer	The identifier for the qtree, unique within the qtree's volume.
metric	metric	Performance numbers, such as IOPS latency and throughput.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.
security_style	string	Security style. Valid in POST or PATCH.

Name	Type	Description
statistics	statistics	These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	Required in POST
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.
user	user	The user set as owner of the qtree.
volume	volume	Required in POST

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a qtree in a FlexVol or FlexGroup volume

POST `/storage/qtrees`

Introduced In: 9.6

Creates a qtree in a FlexVol volume or a FlexGroup volume.

After a qtree is created, the new qtree is assigned an identifier. This identifier is obtained using a qtree GET request. This identifier is used in the API path for the qtree PATCH and DELETE operations.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the qtree.
- `volume.uuid` or `volume.name` - Existing volume in which to create the qtree.
- `name` - Name for the qtree.

Recommended optional properties

If not specified in POST, the values are inherited from the volume.

- `security_style` - Security style for the qtree.
- `unix_permissions` - UNIX permissions for the qtree.
- `export_policy.name or export_policy.id` - Export policy of the SVM for the qtree.

Related ONTAP commands

- `qtree create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.

Name	Type	Description
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.
security_style	string	Security style. Valid in POST or PATCH.
svm	svm	Required in POST
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.

Name	Type	Description
user	user	The user set as owner of the qtree.
volume	volume	Required in POST

Example request

```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "export_policy": {
    "id": 100,
    "name": "default"
  },
  "group": {
    "id": "20001",
    "name": "unix_group1"
  },
  "id": 1,
  "name": "string",
  "nas": {
    "path": "/volume3/qtree1"
  },
  "path": "/volume3/qtree1",
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
  },
  "security_style": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_permissions": 493,
  "user": {
    "id": "10001",
    "name": "unix_user1"
  },
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262245	Invalid field value.
262247	Invalid field value.
917525	The specified volume does not exist in Vserver.
917927	The specified volume was not found.
918232	Either `volume.name` or `volume.uuid` must be provided.
918236	The specified `volume.uuid` and `volume.name` refer to different volumes.
1703954	Export Policy name specified is invalid.
2621462	The specified SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be provided.
5242881	Cannot create qtree because the volume is read-only.
5242886	Failed to create qtree.
5242894	Qtree with empty name "" is not allowed, as that is reserved for the default qtree.
5242900	Qtree not supported on FlexCache volume
5242948	Qtree is not supported on FlexCache origin volume.
5242951	Export Policy supplied does not belong to the specified Export Policy ID.
5242952	Export Policy ID specified is invalid.
5242953	Qtree name must be provided.
5242967	UNIX user or group ID must be 32-bit unsigned integer.
5242970	FlexCache create is in progress for the volume.

Error Code	Description
5242978	The maximum number of qtrees for which extended performance monitoring can be enabled has been reached. Retry the POST request with ext_performance_monitoring.enabled set to false.
5242979	Qtree creation succeeded but failed to enable extended performance monitoring on the qtree.
6622064	Security-style NTFS is not supported on a SnapMirror active sync relationship volume.
8454348	QoS on qtrees is not supported because not all nodes in the cluster can support it.
9437324	The security style unified is not supported.
23724050	Failed to resolve user or group name.
66846755	Failed to determine whether volume is a FlexCache volume or not.
66846839	Failed to determine the effective cluster version of all the nodes hosting FlexCache volumes connected to FlexCache origin volume.
92405926	Qtree operation failed on the specified object store volume.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_policy

Export Policy

Name	Type	Description
id	integer	
name	string	

ext_performance_monitoring

Name	Type	Description
enabled	boolean	Specifies whether extended performance monitoring is enabled for the qtree.

group

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the group that owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric group name of group that owns the qtree. Valid in POST or PATCH.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

nas

Name	Type	Description
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH.

qos_policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled with the next closest collection and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes does not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Required in POST

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the user who owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric username of user who owns the qtree. Valid in POST or PATCH.

volume

Required in POST

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

qtree

A qtree is a directory at the top level of a volume to which a custom export policy (for fine-grained access control) and a quota rule can be applied, if required.

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
security_style	string	Security style. Valid in POST or PATCH.
svm	svm	Required in POST
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.
user	user	The user set as owner of the qtree.
volume	volume	Required in POST

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a qtree

DELETE `/storage/qtrees/{volume.uuid}/{id}`

Introduced In: 9.6

Deletes a qtree.

Related ONTAP commands

- `qtree delete`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
id	string	path	True	Qtree ID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917505	Vserver not found.
917506	Volume not found.
917525	The specified volume does not exist in Vserver.
918235	A volume with UUID was not found.
5242894	The default qtree cannot be deleted.
5242895	Failed to delete the qtree.
5242897	This operation is not permitted on read-only volume.
5242898	This operation is only permitted on a data Vserver.

Error Code	Description
5242916	Cannot delete qtree because the volume contains one or more LUNs.
5242925	The limit for the number of concurrent delete jobs has been reached.
5242927	Unable to find qtree.
5242955	The UUID of the volume is required.
5242957	Failed to delete qtree with ID in the volume and SVM.
5242965	Invalid qtree path. The volume name component of the qtree path, must be the same as the volume specified with the parameter.
10485796	Cannot delete qtree because it contains a Storage Level Access Guard (SLAG).

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve qtree properties

GET `/storage/qtrees/{volume.uuid}/{id}`

Introduced In: 9.6

Retrieves properties for a specific qtree identified by the `volume.uuid` and the `id` in the API path.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `ext_performance_monitoring.enabled`
- `statistics.*`
- `metric.*`

Related ONTAP commands

- `qtree show`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
id	string	path	True	Qtree ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
metric	metric	Performance numbers, such as IOPS latency and throughput.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.
security_style	string	Security style. Valid in POST or PATCH.
statistics	statistics	These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	svm	Required in POST

Name	Type	Description
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.
user	user	The user set as owner of the qtree.
volume	volume	Required in POST

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "export_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 100,
    "name": "default"
  },
  "group": {
    "id": "20001",
    "name": "unix_group1"
  },
  "id": 1,
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT5M",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
```

```
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "name": "string",
  "nas": {
    "path": "/volume3/qtree1"
  },
  "path": "/volume3/qtree1",
  "qos_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "security_style": "string",
  "statistics": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
```

```
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "unix_permissions": 493,
  "user": {
    "id": "10001",
    "name": "unix_user1"
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918235	A volume with UUID was not found.
2621462	The specified SVM does not exist.
5242889	Failed to get the qtree from volume.
5242956	Failed to obtain a qtree with ID.
5242965	Invalid qtree path. The volume name component of the qtree path, must be the same as the volume specified with the parameter.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

export_policy

Export Policy

Name	Type	Description
_links	_links	
id	integer	
name	string	

ext_performance_monitoring

Name	Type	Description
enabled	boolean	Specifies whether extended performance monitoring is enabled for the qtree.

group

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the group that owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric group name of group that owns the qtree. Valid in POST or PATCH.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

nas

Name	Type	Description
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH.

qos_policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
_links	_links	
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.

Name	Type	Description
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled with the next closest collection and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes does not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Required in POST

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the user who owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric username of user who owns the qtree. Valid in POST or PATCH.

volume

Required in POST

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update properties for a qtree

PATCH `/storage/qtrees/{volume.uuid}/{id}`

Introduced In: 9.6

Updates properties for a specific qtree.

Related ONTAP commands

- `qtree modify`
- `qtree rename`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
id	string	path	True	Qtree ID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.

Name	Type	Description
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.
security_style	string	Security style. Valid in POST or PATCH.
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.
user	user	The user set as owner of the qtree.

Example request

```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "export_policy": {
    "id": 100,
    "name": "default"
  },
  "group": {
    "id": "20001",
    "name": "unix_group1"
  },
  "id": 1,
  "name": "string",
  "nas": {
    "path": "/volume3/qtree1"
  },
  "path": "/volume3/qtree1",
  "qos_policy": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "max_throughput_iops": 10000,
    "max_throughput_mbps": 500,
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput_iops": 2000,
    "min_throughput_mbps": 500,
    "name": "performance",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
```

```
  },
  "security_style": "string",
  "unix_permissions": 493,
  "user": {
    "id": "10001",
    "name": "unix_user1"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262196	The request contains a field which cannot be set in this operation.
262278	Required field is missing in the request.
917505	Vserver not found.

Error Code	Description
917525	The specified volume does not exist in Vserver.
918235	A volume with UUID was not found.
5242887	Failed to modify qtree.
5242897	This operation is not permitted on read-only volume.
5242898	This operation is only permitted on a data Vserver.
5242902	Missing inputs.
5242915	Failed to assign qtree export policy to qtree.
5242927	Unable to find qtree.
5242945	Failed to modify qtree.
5242951	Export policy supplied does not belong to the specified export policy ID.
5242954	Failed to get the qtree from volume.
5242955	The UUID of the volume is required.
5242956	Failed to obtain a qtree with ID.
5242957	Failed to delete the qtree.
5242958	Failed to rename the qtree with ID in the volume and SVM.
5242959	Successfully renamed qtree but the modify operation failed.
5242965	Invalid qtree path. The volume name component of the qtree path, must be the same as the volume specified with the parameter.
5242967	UNIX user or group ID must be 32-bit unsigned integer.
5242971	Qtree was renamed. However, the path modification failed.
5242972	Cannot rename qtree as that name already exists on a volume in the Vserver.
5242973	Cannot rename qtree to name with path concurrently on volume in Vserver, unless non-root qtrees in enabled on the volume.
5242974	Moved qtree. However, other properties were not modified.
5242975	Renamed qtree and moved the qtree. However, other properties were not modified.
6622064	Security-style NTFS is not supported on a SnapMirror active sync relationship volume.

Error Code	Description
8454348	QoS on qtrees is not supported because not all nodes in the cluster can support it.
9437324	The security style unified is not supported.
23724050	Failed to resolve user or group name.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

export_policy

Export Policy

Name	Type	Description
id	integer	
name	string	

ext_performance_monitoring

Name	Type	Description
enabled	boolean	Specifies whether extended performance monitoring is enabled for the qtree.

group

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the group that owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric group name of group that owns the qtree. Valid in POST or PATCH.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

nas

Name	Type	Description
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH.

qos_policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw IOPS and throughput performance numbers. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency observed at the storage object, in microseconds. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled with the next closest collection and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes does not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Required in POST

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

user

The user set as owner of the qtree.

Name	Type	Description
id	string	The numeric ID of the user who owns the qtree. Valid in POST or PATCH.
name	string	Alphanumeric username of user who owns the qtree. Valid in POST or PATCH.

volume

Required in POST

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

qtree

A qtree is a directory at the top level of a volume to which a custom export policy (for fine-grained access control) and a quota rule can be applied, if required.

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
export_policy	export_policy	Export Policy
ext_performance_monitoring	ext_performance_monitoring	
group	group	The user set as owner of the qtree.
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree. Required in POST; optional in PATCH.
nas	nas	
path	string	Client visible path to the qtree. This field is not available if the volume does not have a junction-path configured. Not valid in POST or PATCH. This field is to be deprecated and replaced with nas.path.
qos_policy	qos_policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
security_style	string	Security style. Valid in POST or PATCH.
unix_permissions	integer	The UNIX permissions for the qtree. Valid in POST or PATCH.
user	user	The user set as owner of the qtree.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for a qtree with extended performance monitoring enabled

GET `/storage/qtrees/{volume.uuid}/{qtree.id}/metrics`

Introduced In: 9.16

Retrieves historical performance metrics for a qtree which has extended performance monitoring enabled.

Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
duration	string	query	False	Filter by duration
volume.name	string	query	False	Filter by volume.name
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status
qtree.name	string	query	False	Filter by qtree.name
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write

Name	Type	In	Required	Description
throughput.other	integer	query	False	Filter by throughput.other
volume.uuid	string	path	True	Volume UUID
qtree.id	string	path	True	Qtree ID
interval	string	query	False	The time range for the data. Examples can be 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT5M",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "qtree": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 1,
        "name": "qt1"
      },
      "status": "ok",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
```

```
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918235	A volume with UUID was not found.
2621462	The specified SVM does not exist.
5242956	Failed to obtain a qtree with ID.
5242986	Extended performance monitoring is not enabled on the qtree.
8586227	Interval not supported for this object.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

qtree

Name	Type	Description
_links	_links	
id	integer	The identifier for the qtree, unique within the qtree's volume.
name	string	The name of the qtree.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
qtree	qtree	
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
timestamp	string	The timestamp of the performance data.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Storage quota

Storage quota endpoint overview

Overview

Quotas provide a way to restrict or track the files and space usage by a user, group, or qtree. Quotas are enabled for a specific FlexVol or a FlexGroup volume.

Quotas can have soft or hard limits. Soft limits cause ONTAP to send a notification when specified limits are exceeded. Hard limits prevent a write operation from succeeding when specified limits are exceeded.

Quota policy rule APIs

Quotas are defined as quota policy rules specific to FlexVol or FlexGroup volumes. Each quota rule has a type. The type can be either "user", "group", or "tree".

The following APIs can be used to perform create, retrieve, modify, and delete operations related to quota policy rules for a FlexVol or a FlexGroup volume.

– POST /api/storage/quota/rules

– GET /api/storage/quota/rules

– GET /api/storage/quota/rules/{rule-uuid}

– PATCH /api/storage/quota/rules/{rule-uuid}

– DELETE /api/storage/quota/rules/{rule-uuid}

Enabling and disabling quotas

After the quota rules are created, the quota rules need to be enabled on each FlexVol or FlexGroup volume for soft or hard limits to take effect in the filesystem. Enabling quotas can be done on a volume-by-volume basis.

The following APIs can be used to enable and disable and obtain the quota state for a FlexVol or a FlexGroup volume.

– PATCH /api/storage/volumes/{volume-uuid} -d '{"quota.enabled":"true"}'

– PATCH /api/storage/volumes/{volume-uuid} -d '{"quota.enabled":"false"}'

– GET /api/storage/volumes/{volume-uuid}/?fields=quota.state

Quota report APIs

Quota report records provide usage information for a user, group, or qtree against the quota limits configured on a FlexVol or a FlexGroup volume.
The following APIs can be used to retrieve quota reports associated with a FlexVol or a FlexGroup volume.

– GET /api/storage/quota/reports

– GET /api/storage/quota/reports/{volume-uuid}/{index}

Quota resize

Quota resize allows you to modify the quota limits directly in the filesystem.

It is important to note that quota must be enabled on a FlexVol or a FlexGroup volume for `quota resize` to take effect.
You can perform a `quota resize` using the quota policy rule PATCH API. If the quota is disabled on the volume, the quota policy rule PATCH API modifies the rule, but this does not affect the limits in the filesystem.
The following API can be used to perform `quota resize` provided quota is enabled on the volume.

– PATCH /api/storage/quota/rules/{rule-uuid}
 The changed limits in the filesystem can be confirmed using the quota report REST API.

– GET /api/storage/quota/reports

Quota size fields

Quota size fields (e.g. the space.hard_limit property of /storage/quota/reports) may be set to “null” to indicate that there is no enforced limit on the property. This is equivalent to a value of '-' in the ONTAP CLI and ONTAPI interfaces.

For querying size fields, setting <field>=null matches properties that have no limit specified.

For example, to return all records with a files.hard_limit value > 5 OR files.hard_limit=null, the query command

to use is "<path>?files.hard_limit=>5\|null".

When ordering the records returned based on size fields, a record whose property value is null will compare less than a record with a defined property value. This behavior differs from the ONTAPI API ordering but is consistent with the handling of integer fields in other REST API endpoints.

Manage storage quota reports

Storage quota reports endpoint overview

Overview

Quota reports provide the current file and space consumption for a user, group, or qtree in a FlexVol or a FlexGroup volume.

Quota report APIs

The following APIs can be used to retrieve quota reports associated with a volume in ONTAP.

– GET /api/storage/quota/reports

– GET /api/storage/quota/reports/{volume_uuid}/{index}

Examples

Retrieving all the quota report records

This API is used to retrieve all the quota report records.

The following example shows how to retrieve quota report records for all FlexVol volumes and FlexGroup volumes.

```
# The API:
GET /api/storage/quota/reports

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports"  -H 'accept:
application/hal+json'

# The response:
{
  "records": [
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
```

```
          }
        }
      },
      "volume": {
        "uuid": "314a328f-502d-11e9-8771-005056a7f717",
        "name": "fg",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/314a328f-502d-11e9-8771-
005056a7f717"
          }
        }
      },
      "index": 0,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/314a328f-502d-11e9-8771-
005056a7f717/0"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "314a328f-502d-11e9-8771-005056a7f717",
        "name": "fg",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/314a328f-502d-11e9-8771-
005056a7f717"
          }
        }
      },
      "index": 1152921504606846976,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/314a328f-502d-11e9-8771-
005056a7f717/1152921504606846976"
```

```
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "314a328f-502d-11e9-8771-005056a7f717",
        "name": "fg",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/314a328f-502d-11e9-8771-
005056a7f717"
          }
        }
      },
      "index": 3458764513820540928,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/314a328f-502d-11e9-8771-
005056a7f717/3458764513820540928"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "314a328f-502d-11e9-8771-005056a7f717",
        "name": "fg",
        "_links": {
          "self": {
```

```
            "href": "/api/storage/volumes/314a328f-502d-11e9-8771-
005056a7f717"
          }
        }
      },
      "index": 4611686018427387904,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/314a328f-502d-11e9-8771-
005056a7f717/4611686018427387904"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "314a328f-502d-11e9-8771-005056a7f717",
        "name": "fg",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/314a328f-502d-11e9-8771-
005056a7f717"
          }
        }
      },
      "index": 5764607523034234880,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/314a328f-502d-11e9-8771-
005056a7f717/5764607523034234880"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
```

```
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 0,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/0"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 281474976710656,
      "_links": {
        "self": {
```

```
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/281474976710656"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 1152921504606846976,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/1152921504606846976"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
```

```
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 1153202979583557632,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/1153202979583557632"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 2305843013508661248,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/2305843013508661248"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
```

```
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 3458764513820540928,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/3458764513820540928"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 3459045988797251584,
```

```
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/3459045988797251584"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 4611686018427387904,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/4611686018427387904"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
```

```
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 4611967493404098560,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/4611967493404098560"
        }
      }
    },
    {
      "svm": {
        "uuid": "b68f961b-4cee-11e9-930a-005056a7f717",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/b68f961b-4cee-11e9-930a-005056a7f717"
          }
        }
      },
      "volume": {
        "uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
        "name": "fv",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-
005056a7f717"
          }
        }
      },
      "index": 5764607523034234880,
      "_links": {
        "self": {
          "href": "/api/storage/quota/reports/cb20da45-4f6b-11e9-9a71-
005056a7f717/5764607523034234880"
        }
      }
    }
  ],
```

```
  "num_records": 15,
  "_links": {
    "self": {
      "href": "/api/storage/quota/reports/"
    }
  }
}
```

Retrieving a specific quota report record

This API is used to retrieve a specific quota report record.

The following example shows how to retrieve a single quota report user record.

```
# The API:
GET /api/storage/quota/reports/{volume.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports/cf480c37-2a6b-
11e9-8513-005056a7657c/281474976710656"  -H 'accept: application/hal+json'

# Response for quota report user record:
{
"svm": {
  "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
    }
  }
},
"volume": {
  "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
  "name": "fv",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-005056a7657c"
    }
  }
},
"index": 281474976710656,
"type": "user",
```

```
"users": [
  {
    "name": "fred",
    "id"  : "300008"
  }
],
"qtree": {
  "name": "qt1",
  "id": 1,
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-005056a7657c/1"
    }
  }
},
"space": {
  "hard_limit": 41943040,
  "soft_limit": 31457280,
  "used": {
    "total": 10567680,
    "soft_limit_percent": 34,
    "hard_limit_percent": 25
  }
},
"files": {
  "soft_limit": 30,
  "hard_limit": 40,
  "used": {
    "total": 11,
    "soft_limit_percent": 37,
    "hard_limit_percent": 28
  }
},
"_links": {
  "self": {
    "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/281474976710656"
  }
}
}
```


Retrieving a single quota report multi-user record

```
# The API:
GET /api/storage/quota/reports/{volume.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports/cf480c37-2a6b-
11e9-8513-005056a7657c/281474976710656"  -H 'accept: application/hal+json'

# Response for quota report multi-user record:
{
"svm": {
  "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
    }
  }
},
"volume": {
  "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
  "name": "fv",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-005056a7657c"
    }
  }
},
"index": 1153484454560268288,
"type": "user",
"users": [
  {
    "name": "fred",
    "id"  : "300008"
  },
  {
    "name": "john",
    "id"  : "300009"
  },
  {
    "name": "smith",
    "id"  : "300010"
  }
],
"qtree": {
  "name": "qt1",
  "id": 1,
```

```
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-005056a7657c/1"
    }
  }
},
"space": {
  "hard_limit": 41943040,
  "soft_limit": 31457280,
  "used": {
    "total": 10567680,
    "soft_limit_percent": 34,
    "hard_limit_percent": 25
  }
},
"files": {
  "soft_limit": 30,
  "hard_limit": 40,
  "used": {
    "total": 11,
    "soft_limit_percent": 37,
    "hard_limit_percent": 28
  }
},
"_links": {
  "self": {
    "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/1153484454560268288"
  }
}
}
```


Retrieving a single quota report group record

```
# The API:
GET /api/storage/quota/reports/{volume.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports/cf480c37-2a6b-
11e9-8513-005056a7657c/3459045988797251584"  -H 'accept:
application/hal+json'
```

```
# Response for quota report group record:
{
"svm": {
  "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
    }
  }
},
"volume": {
  "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
  "name": "fv",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-005056a7657c"
    }
  }
},
"index": 3459045988797251584,
"type": "group",
"group": {
  "name"  : "test_group",
  "id"    : "500009"
},
"qtree": {
  "name": "qt1",
  "id": 1,
  "_links": {
    "self": {
      "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-005056a7657c/1"
    }
  }
},
"space": {
  "hard_limit": 41943040,
  "soft_limit": 31457280,
  "used": {
    "total": 10567680,
    "soft_limit_percent": 34,
    "hard_limit_percent": 25
  }
},
"files": {
  "soft_limit": 30,
```

```
  "hard_limit": 40,
  "used": {
    "total": 11,
    "soft_limit_percent": 37,
    "hard_limit_percent": 28
  }
},
"_links": {
  "self": {
    "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/3459045988797251584"
  }
}
}
```

Retrieving a single quota report tree record

```
# The API:
GET /api/storage/quota/reports/{volume.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports/cf480c37-2a6b-
11e9-8513-005056a7657c/4612248968380809216"  -H 'accept:
application/hal+json'

# Response for quota report tree record:
{
"svm": {
  "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
  "name": "svm1",
  "_links": {
    "self": {
      "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
    }
  }
},
"volume": {
  "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
  "name": "fv",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-005056a7657c"
```

```
      }
    }
  },
  "index": 4612248968380809216,
  "type": "tree",
  "qtree": {
    "name": "qt1",
    "id": 1,
    "_links": {
      "self": {
        "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-005056a7657c/1"
      }
    }
  },
  "space": {
    "hard_limit": 41943040,
    "soft_limit": 31457280,
    "used": {
      "total": 10567680,
      "soft_limit_percent": 34,
      "hard_limit_percent": 25
    }
  },
  "files": {
    "soft_limit": 30,
    "hard_limit": 40,
    "used": {
      "total": 11,
      "soft_limit_percent": 37,
      "hard_limit_percent": 28
    }
  },
  "_links": {
    "self": {
      "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/4612248968380809216"
    }
  }
}
```


Retrieving only records enforced by non-default rules

```
# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/quota/reports?show_default_records=false"  -H 'accept:
application/hal+json'

# Response from only  non-default records
{
"records": [
  {
    "svm": {
      "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
        }
      }
    },
    "volume": {
      "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
      "name": "fv",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-
005056a7657c"
        }
      }
    },
    "index": 4612248968380809216,
    "type": "tree",
    "qtree": {
      "name": "qt1",
      "id": 1,
      "_links": {
        "self": {
          "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-
005056a7657c/1"
        }
      }
    },
    "space": {
      "hard_limit": 41943040,
      "soft_limit": 31457280,
      "used": {
        "total": 10567680,
        "soft_limit_percent": 34,
```

```
        "hard_limit_percent": 25
      }
    },
    "files": {
      "soft_limit": 30,
      "hard_limit": 40,
      "used": {
        "total": 11,
        "soft_limit_percent": 37,
        "hard_limit_percent": 28
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/4612248968380809216"
      }
    }
  },
  {
    "svm": {
      "uuid": "5093e722-248e-11e9-96ee-005056a7657c",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/5093e722-248e-11e9-96ee-005056a7657c"
        }
      }
    },
    "volume": {
      "uuid": "cf480c37-2a6b-11e9-8513-005056a7657c",
      "name": "fv",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/cf480c37-2a6b-11e9-8513-
005056a7657c"
        }
      }
    },
    "index": 1153484454560268288,
    "type": "user",
    "users": [
      {
        "name": "fred",
        "id"  : "300008"
      },
```

```
      {
        "name": "john",
        "id"  : "300009"
      },
      {
        "name": "smith",
        "id"  : "300010"
      }
    ],
    "qtree": {
      "name": "qt1",
      "id": 1,
      "_links": {
        "self": {
          "href": "/api/storage/qtrees/cf480c37-2a6b-11e9-8513-
005056a7657c/1"
        }
      }
    },
    "space": {
      "hard_limit": 41943040,
      "soft_limit": 31457280,
      "used": {
        "total": 10567680,
        "soft_limit_percent": 34,
        "hard_limit_percent": 25
      }
    },
    "files": {
      "soft_limit": 30,
      "hard_limit": 40,
      "used": {
        "total": 11,
        "soft_limit_percent": 37,
        "hard_limit_percent": 28
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/cf480c37-2a6b-11e9-8513-
005056a7657c/1153484454560268288"
      }
    }
  }
],
"num_records": 2,
```

```
"_links": {
  "self": {
    "href": "/api/storage/quota/reports?show_default_records=false"
  }
}
}
```

Retrieving quota report records with query parameters

The following example shows how to retrieve tree type quota report records.

```
# The API:
GET /api/storage/quota/reports

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/quota/reports?type=tree"  -H
'accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "903e54ee-6ccf-11ea-bc35-005056823577",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/903e54ee-6ccf-11ea-bc35-005056823577"
        }
      }
    },
    "volume": {
      "uuid": "8812b000-6e1e-11ea-9bad-00505682cd5c",
      "name": "fv",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/8812b000-6e1e-11ea-9bad-
00505682cd5c"
        }
      }
    },
    "index": 2305843013508661248,
```

```
    "type": "tree",
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/8812b000-6e1e-11ea-9bad-
00505682cd5c/2305843013508661248"
      }
    }
  },
  {
    "svm": {
      "uuid": "903e54ee-6ccf-11ea-bc35-005056823577",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/903e54ee-6ccf-11ea-bc35-005056823577"
        }
      }
    },
    "volume": {
      "uuid": "a5ceebd2-6ccf-11ea-bc35-005056823577",
      "name": "fg",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/a5ceebd2-6ccf-11ea-bc35-
005056823577"
        }
      }
    },
    "index": 2305843013508661248,
    "type": "tree",
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/a5ceebd2-6ccf-11ea-bc35-
005056823577/2305843013508661248"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/storage/quota/reports?type=tree"
  }
}
}
```

Retrieving all the quota reports of a specific volume and the files fields

```
# The API:
GET /api/storage/quota/reports

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/quota/reports?volume.name=fv&fields=files"  -H 'accept:
application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "903e54ee-6ccf-11ea-bc35-005056823577",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/903e54ee-6ccf-11ea-bc35-005056823577"
        }
      }
    },
    "volume": {
      "uuid": "8812b000-6e1e-11ea-9bad-00505682cd5c",
      "name": "fv",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/8812b000-6e1e-11ea-9bad-
00505682cd5c"
        }
      }
    },
    "index": 410328290557952,
    "files": {
      "soft_limit": 20,
      "hard_limit": 30,
      "used": {
        "total": 0,
        "soft_limit_percent": 0,
        "hard_limit_percent": 0
      }
    },
    "_links": {
```

```
      "self": {
        "href": "/api/storage/quota/reports/8812b000-6e1e-11ea-9bad-
00505682cd5c/410328290557952"
      }
    }
  },
  {
    "svm": {
      "uuid": "903e54ee-6ccf-11ea-bc35-005056823577",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/903e54ee-6ccf-11ea-bc35-005056823577"
        }
      }
    },
    "volume": {
      "uuid": "8812b000-6e1e-11ea-9bad-00505682cd5c",
      "name": "fv",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/8812b000-6e1e-11ea-9bad-
00505682cd5c"
        }
      }
    },
    "index": 2305843013508661248,
    "files": {
      "soft_limit": 200,
      "hard_limit": 400,
      "used": {
        "total": 4,
        "soft_limit_percent": 2,
        "hard_limit_percent": 1
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/8812b000-6e1e-11ea-9bad-
00505682cd5c/2305843013508661248"
      }
    }
  }
],
"num_records": 2,
"_links": {
```

```
  "self": {
    "href": "/api/storage/quota/reports?volume.name=fv&fields=files"
  }
}
}
```

Retrieving quota reports for all volumes with the property files.hard_limit greater than 5 or null (unlimited) for qtree qt1

```
# The API:
GET /api/storage/quota/reports

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/quota/reports?qtree.name=qt1&files.hard_limit=>5&#124;null
" -H 'accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume",
      "uuid": "0c9cff59-da3c-11ed-930f-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/0c9cff59-da3c-11ed-930f-
005056ac3135"
        }
      }
    },
    "index": 281474976710656,
    "qtree": {
```

```
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/0c9cff59-da3c-11ed-930f-
005056ac3135/281474976710656"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume",
      "uuid": "0c9cff59-da3c-11ed-930f-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/0c9cff59-da3c-11ed-930f-
005056ac3135"
        }
      }
    },
    "index": 1153202979583557632,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/0c9cff59-da3c-11ed-930f-
005056ac3135/1153202979583557632"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
```

```
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume",
      "uuid": "0c9cff59-da3c-11ed-930f-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/0c9cff59-da3c-11ed-930f-
005056ac3135"
        }
      }
    },
    "index": 2305843013508661248,
    "qtree": {
      "name": "qt1"
    },
    "files": {
      "hard_limit": 15
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/0c9cff59-da3c-11ed-930f-
005056ac3135/2305843013508661248"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume",
      "uuid": "0c9cff59-da3c-11ed-930f-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/0c9cff59-da3c-11ed-930f-
005056ac3135"
        }
```

```
      }
    },
    "index": 3459045988797251584,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/0c9cff59-da3c-11ed-930f-
005056ac3135/3459045988797251584"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume",
      "uuid": "0c9cff59-da3c-11ed-930f-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/0c9cff59-da3c-11ed-930f-
005056ac3135"
        }
      }
    },
    "index": 4611967493404098560,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/0c9cff59-da3c-11ed-930f-
005056ac3135/4611967493404098560"
      }
    }
  },
  {
    "svm": {
```

```
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume2",
      "uuid": "3a2a8d78-ded3-11ed-9806-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/3a2a8d78-ded3-11ed-9806-
005056ac3135"
        }
      }
    },
    "index": 281474976710656,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/3a2a8d78-ded3-11ed-9806-
005056ac3135/281474976710656"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume2",
      "uuid": "3a2a8d78-ded3-11ed-9806-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/3a2a8d78-ded3-11ed-9806-
005056ac3135"
```

```
        }
      }
    },
    "index": 1153202979583557632,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/3a2a8d78-ded3-11ed-9806-
005056ac3135/1153202979583557632"
      }
    }
  },
  {
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume2",
      "uuid": "3a2a8d78-ded3-11ed-9806-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/3a2a8d78-ded3-11ed-9806-
005056ac3135"
        }
      }
    },
    "index": 3459045988797251584,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/3a2a8d78-ded3-11ed-9806-
005056ac3135/3459045988797251584"
      }
    }
  },
  {
```

```
    "svm": {
      "name": "vs0",
      "uuid": "842981cb-c985-11ed-a399-005056ac442b",
      "_links": {
        "self": {
          "href": "/api/svm/svms/842981cb-c985-11ed-a399-005056ac442b"
        }
      }
    },
    "volume": {
      "name": "srcVolume2",
      "uuid": "3a2a8d78-ded3-11ed-9806-005056ac3135",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/3a2a8d78-ded3-11ed-9806-
005056ac3135"
        }
      }
    },
    "index": 4611967493404098560,
    "qtree": {
      "name": "qt1"
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/reports/3a2a8d78-ded3-11ed-9806-
005056ac3135/4611967493404098560"
      }
    }
  }
],
"num_records": 9,
"_links": {
  "self": {
    "href":
"/api/storage/quota/reports?qtree.name=qt1&files.hard_limit=>5&#124;null"
  }
}
}
```

Retrieve the quota report records for all FlexVol and FlexGroup volumes

GET `/storage/quota/reports`

Introduced In: 9.6

Retrieves the quota report records for all FlexVol volumes and FlexGroup volumes.

Related ONTAP commands

- `quota report`

Parameters

Name	Type	In	Required	Description
space.used.soft_limit_percent	integer	query	False	Filter by space.used.soft_limit_percent
space.used.hard_limit_percent	integer	query	False	Filter by space.used.hard_limit_percent
space.used.total	integer	query	False	Filter by space.used.total
space.hard_limit	integer	query	False	Filter by space.hard_limit
space.soft_limit	integer	query	False	Filter by space.soft_limit
index	integer	query	False	Filter by index
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
users.name	string	query	False	Filter by users.name
users.id	string	query	False	Filter by users.id
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
files.used.total	integer	query	False	Filter by files.used.total

Name	Type	In	Required	Description
files.used.soft_limit_percent	integer	query	False	Filter by files.used.soft_limit_percent
files.used.hard_limit_percent	integer	query	False	Filter by files.used.hard_limit_percent
files.hard_limit	integer	query	False	Filter by files.hard_limit
files.soft_limit	integer	query	False	Filter by files.soft_limit
group.name	string	query	False	Filter by group.name
group.id	string	query	False	Filter by group.id
qtree.id	integer	query	False	Filter by qtree.id
qtree.name	string	query	False	Filter by qtree.name
show_default_records	boolean	query	False	The default is true for GET calls. When set to false, the default records are not reported. • Introduced in: 9.7 • Default value: 1
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[quota_report]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "files": {
        "hard_limit": 0,
        "soft_limit": 0,
        "used": {
          "hard_limit_percent": 0,
          "soft_limit_percent": 0,
          "total": 0
        }
      },
      "group": {
        "id": "string",
        "name": "string"
      },
      "index": 0,
      "qtree": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 1,
        "name": "qt1"
      },
      "space": {
        "hard_limit": 0,
        "soft_limit": 0,
        "used": {
```

```
          "hard_limit_percent": 0,
          "soft_limit_percent": 0,
          "total": 0
        }
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "users": [
        {
          "id": "string",
          "name": "string"
        }
      ],
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

used

Name	Type	Description
hard_limit_percent	integer	Total files used as a percentage of file hard limit
soft_limit_percent	integer	Total files used as a percentage of file soft limit
total	integer	Total files used

files

Name	Type	Description
hard_limit	integer	File hard limit
soft_limit	integer	File soft limit
used	used	

group

This parameter specifies the target group associated with the given quota report record. This parameter is available for group quota records and is not available for user or tree quota records. The target group is identified by a UNIX group name and UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree associated with the user, group, or tree record. For a user/group quota policy rule at volume level, this parameter is not valid. For a default tree quota policy rule, this parameter is specified as "" or "*". For a tree quota policy rule at qtree level, this parameter specifies a qtree name and a qtree identifier.

Name	Type	Description
_links	_links	
id	integer	The unique identifier for a qtree.
name	string	The name of the qtree.

used

Name	Type	Description
hard_limit_percent	integer	Total space used as a percentage of space hard limit
soft_limit_percent	integer	Total space used as a percentage of space soft limit
total	integer	Total space used

space

Name	Type	Description
hard_limit	integer	Space hard limit in bytes
soft_limit	integer	Space soft limit in bytes
used	used	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

quota_report

Name	Type	Description
_links	_links	
files	files	

Name	Type	Description
group	group	This parameter specifies the target group associated with the given quota report record. This parameter is available for group quota records and is not available for user or tree quota records. The target group is identified by a UNIX group name and UNIX group identifier.
index	integer	Index that identifies a unique quota record. Valid in URL.
qtree	qtree	This parameter specifies the target qtree associated with the user, group, or tree record. For a user/group quota policy rule at volume level, this parameter is not valid. For a default tree quota policy rule, this parameter is specified as "" or "*". For a tree quota policy rule at qtree level, this parameter specifies a qtree name and a qtree identifier.
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Quota type associated with the quota record.
users	array[users]	This parameter specifies the target user or users associated with the given quota report record. This parameter is available for user quota records and is not available for group or tree quota records. The target user or users are identified by a user name and user identifier. The user name can be a UNIX user name or a Windows user name, and the identifier can be a UNIX user identifier or a Windows security identifier.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific quota report record

GET `/storage/quota/reports/{volume.uuid}/{index}`

Introduced In: 9.6

Retrieves a specific quota report record.

Related ONTAP commands

- `quota report`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
index	integer	path	True	Quota report index
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
files	files	
group	group	This parameter specifies the target group associated with the given quota report record. This parameter is available for group quota records and is not available for user or tree quota records. The target group is identified by a UNIX group name and UNIX group identifier.
index	integer	Index that identifies a unique quota record. Valid in URL.
qtree	qtree	This parameter specifies the target qtree associated with the user, group, or tree record. For a user/group quota policy rule at volume level, this parameter is not valid. For a default tree quota policy rule, this parameter is specified as "" or "*". For a tree quota policy rule at qtree level, this parameter specifies a qtree name and a qtree identifier.
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Quota type associated with the quota record.
users	array[users]	This parameter specifies the target user or users associated with the given quota report record. This parameter is available for user quota records and is not available for group or tree quota records. The target user or users are identified by a user name and user identifier. The user name can be a UNIX user name or a Windows user name, and the identifier can be a UNIX user identifier or a Windows security identifier.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "files": {
    "hard_limit": 0,
    "soft_limit": 0,
    "used": {
      "hard_limit_percent": 0,
      "soft_limit_percent": 0,
      "total": 0
    }
  },
  "group": {
    "id": "string",
    "name": "string"
  },
  "index": 0,
  "qtree": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 1,
    "name": "qt1"
  },
  "space": {
    "hard_limit": 0,
    "soft_limit": 0,
    "used": {
      "hard_limit_percent": 0,
      "soft_limit_percent": 0,
      "total": 0
    }
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
```

```
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "type": "string",
    "users": [
      {
        "id": "string",
        "name": "string"
      }
    ],
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918235	A volume with UUID was not found.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

used

Name	Type	Description
hard_limit_percent	integer	Total files used as a percentage of file hard limit
soft_limit_percent	integer	Total files used as a percentage of file soft limit
total	integer	Total files used

files

Name	Type	Description
hard_limit	integer	File hard limit
soft_limit	integer	File soft limit
used	used	

group

This parameter specifies the target group associated with the given quota report record. This parameter is available for group quota records and is not available for user or tree quota records. The target group is identified by a UNIX group name and UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree associated with the user, group, or tree record. For a user/group

quota policy rule at volume level, this parameter is not valid. For a default tree quota policy rule, this parameter is specified as "" or "*". For a tree quota policy rule at qtree level, this parameter specifies a qtree name and a qtree identifier.

Name	Type	Description
_links	_links	
id	integer	The unique identifier for a qtree.
name	string	The name of the qtree.

used

Name	Type	Description
hard_limit_percent	integer	Total space used as a percentage of space hard limit
soft_limit_percent	integer	Total space used as a percentage of space soft limit
total	integer	Total space used

space

Name	Type	Description
hard_limit	integer	Space hard limit in bytes
soft_limit	integer	Space soft limit in bytes
used	used	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage quota policy rules

Storage quota rules endpoint overview

Overview

Quotas are defined in quota rules specific to FlexVol volumes or FlexGroup volumes. Each quota rule has a type. The type can be "user", "group", or "tree".

– User rules must have the user property and qtree property.

– Group rules must have the group property and qtree property.

– Tree rules must have the qtree property and not have the user or group property.

Quota policy rule APIs

The following APIs can be used to perform create, retrieve, modify, and delete operations related to quota policy rules.

– POST /api/storage/quota/rules

– GET /api/storage/quota/rules

– GET /api/storage/quota/rules/{rule-uuid}

– PATCH /api/storage/quota/rules/{rule-uuid}

– DELETE /api/storage/quota/rules/{rule-uuid}

Examples

Retrieving all quota policy rules

This API is used to retrieve all quota policy rules.

The following example shows how to retrieve quota policy rules for FlexVol volumes and FlexGroup volumes.

```
# The API:
GET /api/storage/quota/rules

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules' -H 'accept:
application/hal+json'

# The response:
{
  "records": [
    {
      "svm": {
```

```
        "uuid": "038545f8-9ff8-11e8-bce6-005056a73bed",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/038545f8-9ff8-11e8-bce6-005056a73bed"
          }
        }
      },
      "volume": {
        "uuid": "ab3df793-0f02-43c6-9514-4f142fc8cc92",
        "name": "vol1",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/ab3df793-0f02-43c6-9514-
4f142fc8cc92"
          }
        }
      },
      "uuid": "66319cbe-b837-11e8-9c5a-005056a7e88c",
      "_links": {
        "self": {
          "href": "/api/storage/quota/rules/66319cbe-b837-11e8-9c5a-
005056a7e88c"
        }
      }
    },
    {
      "svm": {
        "uuid": "038545f8-9ff8-11e8-bce6-005056a73bed",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/038545f8-9ff8-11e8-bce6-005056a73bed"
          }
        }
      },
      "volume": {
        "uuid": "ab3df793-0f02-43c6-9514-4f142fc8cc92",
        "name": "vol1",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/ab3df793-0f02-43c6-9514-
4f142fc8cc92"
          }
        }
      },
```

```
      "uuid": "dbd5b443-b7a4-11e8-bc58-005056a7e88c",
      "_links": {
        "self": {
          "href": "/api/storage/quota/rules/dbd5b443-b7a4-11e8-bc58-
005056a7e88c"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/storage/quota/rules"
    }
  }
}
```

Retrieving a specific quota policy rule

This API is used to retrieve a quota policy rule for a specific qtree.

The following example shows how to retrieve a quota policy user rule for a specific qtree.

```
# The API:
GET /api/storage/quota/rules/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules/264a9e0b-2e03-11e9-
a610-005056a7b72d' -H 'accept: application/hal+json'

# Response for a user rule at a qtree level:
{
  "svm": {
    "uuid": "fd5db15a-15b9-11e9-a6ad-005056a760e0",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/fd5db15a-15b9-11e9-a6ad-005056a760e0"
      }
    }
  },
  "volume": {
    "uuid": "c1b64eea-ca8b-45ec-9397-ab489830d268",
```

```
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/c1b64eea-ca8b-45ec-9397-
ab489830d268"
      }
    }
  },
  "uuid": "264a9e0b-2e03-11e9-a610-005056a7b72d",
  "type": "user",
  "users": [ {"name" : "fred"} ],
  "qtree": {
    "name": "qt1",
    "id": 1,
    "_links": {
      "self": {
        "href": "/api/storage/qtrees/c1b64eea-ca8b-45ec-9397-
ab489830d268/1"
      }
    }
  },
  "user_mapping": on,
  "space": {
    "hard_limit": 1222800,
    "soft_limit": 51200
  },
  "files": {
    "hard_limit": 100,
    "soft_limit": 80
  },
  "_links": {
    "self": {
      "href": "/api/storage/quota/rules/264a9e0b-2e03-11e9-a610-
005056a7b72d"
    }
  }
}
```


Retrieving a quota policy multi-user rule at the volume level

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules/0ab84fba-19aa-11e9-
```

```
a04d-005056a72f42' -H 'accept: application/hal+json'

# Response for a multi-user rule at volume level:
{
  "svm": {
    "uuid": "fd5db15a-15b9-11e9-a6ad-005056a760e0",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/fd5db15a-15b9-11e9-a6ad-005056a760e0"
      }
    }
  },
  "volume": {
    "uuid": "c1b64eea-ca8b-45ec-9397-ab489830d268",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/c1b64eea-ca8b-45ec-9397-
ab489830d268"
      }
    }
  },
  "uuid": "0ab84fba-19aa-11e9-a04d-005056a72f42",
  "type": "user",
  "users": [
    {
      "name": "sam",
    },
    {
      "name": "smith",
    },
    {
      "id": "300010",
    },
  ],
  "space": {
    "hard_limit": 1222800,
    "soft_limit": 51200
  },
  "files": {
    "hard_limit": 100,
    "soft_limit": 80
  },
  "_links": {
    "self": {
```

```
      "href": "/api/storage/quota/rules/0ab84fba-19aa-11e9-a04d-
005056a72f42"
    }
  }
}
```


Retrieving a quota policy default tree rule

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules/4a276b8c-1753-11e9-
8101-005056a760e0' -H 'accept: application/hal+json'

# Response for a default tree rule:
{
  "svm": {
    "uuid": "fd5db15a-15b9-11e9-a6ad-005056a760e0",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/fd5db15a-15b9-11e9-a6ad-005056a760e0"
      }
    }
  },
  "volume": {
    "uuid": "c1b64eea-ca8b-45ec-9397-ab489830d268",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/c1b64eea-ca8b-45ec-9397-
ab489830d268"
      }
    }
  },
  "uuid": "4a276b8c-1753-11e9-8101-005056a760e0",
  "type": "tree",
  "qtree": {
    "name": ""
  },
  "space": {
    "hard_limit": 1034000,
    "soft_limit": 51200
  },
  "files": {
    "hard_limit": 20,
    "soft_limit": 10
  },
  "_links": {
    "self": {
      "href": "/api/storage/quota/rules/4a276b8c-1753-11e9-8101-
005056a760e0"
    }
  }
}
```

Retrieving a quota policy tree rule for a specific qtree

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules/49b1134f-19ab-11e9-
a04d-005056a72f42' -H 'accept: application/hal+json'

# Response for a tree rule for a specific qtree:
{
  "svm": {
    "uuid": "fd5db15a-15b9-11e9-a6ad-005056a760e0",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/fd5db15a-15b9-11e9-a6ad-005056a760e0"
      }
    }
  },
  "volume": {
    "uuid": "c1b64eea-ca8b-45ec-9397-ab489830d268",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/c1b64eea-ca8b-45ec-9397-
ab489830d268"
      }
    }
  },
  "uuid": "49b1134f-19ab-11e9-a04d-005056a72f42",
  "type": "tree",
  "qtree": {
    "name": "qt1",
    "id": 1,
    "_links": {
      "self": {
        "href": "/api/storage/qtrees/c1b64eea-ca8b-45ec-9397-
ab489830d268/1"
      }
    }
  },
  "space": {
    "hard_limit": 1048576,
    "soft_limit": 838861
  },
  "files": {
```

```
    "hard_limit": 100,
    "soft_limit": 40
  },
  "_links": {
    "self": {
      "href": "/api/storage/quota/rules/49b1134f-19ab-11e9-a04d-
005056a72f42"
    }
  }
}
```

Retrieving a quota policy group rule for a specific qtree

```
# The call:
curl -X GET 'https://<mgmt-ip>/api/storage/quota/rules/b9236852-19ab-11e9-
a04d-005056a72f42' -H 'accept: application/hal+json'

# Response for a group rule:
{
  "svm": {
    "uuid": "fd5db15a-15b9-11e9-a6ad-005056a760e0",
    "name": "svm1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/fd5db15a-15b9-11e9-a6ad-005056a760e0"
      }
    }
  },
  "volume": {
    "uuid": "c1b64eea-ca8b-45ec-9397-ab489830d268",
    "name": "vol1",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/c1b64eea-ca8b-45ec-9397-
ab489830d268"
      }
    }
  },
  "uuid": "b9236852-19ab-11e9-a04d-005056a72f42",
  "type": "group",
  "group": {"name" : "group1"},
  "qtree": {
```

```
    "name": "qt1",
    "id": 1,
    "_links": {
      "self": {
        "href": "/api/storage/qtrees/c1b64eea-ca8b-45ec-9397-
ab489830d268/1"
      }
    }
  },
  "space": {
    "hard_limit": 2097152,
    "soft_limit": 1572864
  },
  "files": {
    "hard_limit": 250,
    "soft_limit": 200
  },
  "_links": {
    "self": {
      "href": "/api/storage/quota/rules/b9236852-19ab-11e9-a04d-
005056a72f42"
    }
  }
}
```

Creating a quota policy rule

This API is used to create a new quota policy rule. When an explicit rule or a qtree-scoped rule of a type is created on a volume, a default rule of the same type is automatically added if it does not already exist on the volume.

The following example shows how to create a quota policy user rule using POST.

```
# The API:
POST /api/storage/quota/rules

# The call:
curl -X POST 'https://<mgmt-
ip>/api/storage/quota/rules?return_records=true' -H 'accept:
application/hal+json' -d @test_quota_post.txt
test_quota_post.txt(body):
{
"svm": {
```

```
  "name": "svm1"
},
"volume": {
  "name": "vol1"
},
"type": "user",
"users": [ {"name" : "example_user"} ],
"qtree": {
  "name":"qt1"
},
"user_mapping": "on",
"space": {
  "hard_limit": 8192,
  "soft_limit": 1024
},
"files": {
  "hard_limit": 20,
  "soft_limit": 10
}
}

# The response
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1"
      },
      "volume": {
        "name": "fv"
      },
      "uuid": "3220eea6-5049-11e9-bfb7-005056a7f717",
      "type": "user",
      "users": [
        {
          "name" : "example_user"
        }
      ],
      "qtree": {
        "name": "qt1"
      },
      "user_mapping": "on",
      "space": {
        "hard_limit": 8192,
        "soft_limit": 1024
```

```
      },
      "files": {
        "hard_limit": 20,
        "soft_limit": 10
      },
      "_links": {
        "self": {
          "href": "/api/storage/quota/rules/3220eea6-5049-11e9-bfb7-
005056a7f717"
        }
      }
    }
  ],
  "job": {
    "uuid": "32223924-5049-11e9-bfb7-005056a7f717",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/32223924-5049-11e9-bfb7-005056a7f717"
      }
    }
  }
}
```


Creating a quota policy group rule using POST.

```
# The API:
POST /api/storage/quota/rules

# The call:
curl -X POST 'https://<mgmt-
ip>/api/storage/quota/rules?return_records=true' -H 'accept:
application/hal+json' -d @test_quota_post.txt
test_quota_post.txt(body):
{
"svm": {
  "name": "svm1"
},
"volume": {
  "name": "vol1"
},
"type": "group",
"group": {
```

```
  "name" : "test_group1"
},
"qtree": {
  "name":"qt1"
},
"space": {
  "hard_limit": 8192,
  "soft_limit": 1024
},
"files": {
  "hard_limit": 20,
  "soft_limit": 10
}
}

# The response
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1"
      },
      "volume": {
        "name": "fv"
      },
      "uuid": "3b130f7d-504a-11e9-bfb7-005056a7f717",
      "type": "group",
      "group": {
          "name" : "test_group1"
      },
      "qtree": {
        "name": "qt1"
      },
      "space": {
        "hard_limit": 8192,
        "soft_limit": 1024
      },
      "files": {
        "hard_limit": 20,
        "soft_limit": 10
      },
      "_links": {
        "self": {
          "href": "/api/storage/quota/rules/3b130f7d-504a-11e9-bfb7-
005056a7f717"
```

```
        }
      }
    }
  ],
  "job": {
    "uuid": "32223924-5049-11e9-bfb7-005056a7f717",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/32223924-5049-11e9-bfb7-005056a7f717"
      }
    }
  }
}
```

Creating a quota policy tree rule using POST

```
# The API:
POST /api/storage/quota/rules

# The call:
curl -X POST 'https://<mgmt-
ip>/api/storage/quota/rules?return_records=true' -H 'accept:
application/hal+json' -d @test_quota_post.txt
test_quota_post.txt(body):
{
"svm": {
  "name": "svm1"
},
"volume": {
  "name": "vol1"
},
"type": "tree",
"qtree": {
  "name":"qt1"
},
"space": {
  "hard_limit": 8192,
  "soft_limit": 1024
},
"files": {
  "hard_limit": 20,
  "soft_limit": 10
```

```
}
}

# The response
{
  "num_records": 1,
  "records": [
    {
      "svm": {
        "name": "svm1"
      },
      "volume": {
        "name": "fv"
      },
      "uuid": "e5eb03be-504a-11e9-bfb7-005056a7f717",
      "type": "tree",
      "qtree": {
        "name": "qt1"
      },
      "space": {
        "hard_limit": 8192,
        "soft_limit": 1024
      },
      "files": {
        "hard_limit": 20,
        "soft_limit": 10
      },
      "_links": {
        "self": {
          "href": "/api/storage/quota/rules/e5eb03be-504a-11e9-bfb7-
005056a7f717"
        }
      }
    }
  ],
  "job": {
    "uuid": "32223924-5049-11e9-bfb7-005056a7f717",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/32223924-5049-11e9-bfb7-005056a7f717"
      }
    }
  }
}
```

Updating the quota policy rule

This API is used to update a quota policy rule.

The following example shows how to update a quota policy rule.

```
# The API:
PATCH /storage/quota/rules/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/quota/rules/364d38eb-8e87-
11e8-a806-005056a7e73a" -H 'accept: application/hal+json' -d
"@test_quota_patch.txt"
test_quota_patch.txt(body):
{
"space": {
  "hard_limit": 16554,
  "soft_limit": 8192
},
"files": {
  "hard_limit": 40,
  "soft_limit": 20
}
}
```

Deleting the quota policy rule

This API is used to delete a quota policy rule.

The following example shows how to delete a quota policy rule.

```
# The API:
DELETE /storage/quota/rules/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/quota/rules/364d38eb-8e87-
11e8-a806-005056a7e73a" -H 'accept: application/hal+json'
```

Retrieving a quota policy rule with the property files.hard_limit greater than 5 or null (unlimited) for qtree qt1

```
# The API:
GET /api/storage/quota/rules

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/quota/rules?rqtree.name=qt1&files.hard_limit=>5&#124;null"
-H 'accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "2272378d-eab2-11ed-913b-005056ac10bf",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2272378d-eab2-11ed-913b-005056ac10bf"
        }
      }
    },
    "volume": {
      "uuid": "6dc24682-edde-11ed-8b6b-005056acde94",
      "name": "testVol",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/6dc24682-edde-11ed-8b6b-
005056acde94"
        }
      }
    },
    "uuid": "9abfdd9f-ede7-11ed-8b6b-005056acde94",
    "files": {
      "hard_limit": 15
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/rules/9abfdd9f-ede7-11ed-8b6b-
005056acde94"
      }
    }
  },
```

```
  {
    "svm": {
      "uuid": "2272378d-eab2-11ed-913b-005056ac10bf",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2272378d-eab2-11ed-913b-005056ac10bf"
        }
      }
    },
    "volume": {
      "uuid": "83c865bd-edde-11ed-8b6b-005056acde94",
      "name": "testVol2",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/83c865bd-edde-11ed-8b6b-
005056acde94"
        }
      }
    },
    "uuid": "a876601e-ede7-11ed-8b6b-005056acde94",
    "files": {
      "hard_limit": 6
    },
    "_links": {
      "self": {
        "href": "/api/storage/quota/rules/a876601e-ede7-11ed-8b6b-
005056acde94"
      }
    }
  },
  {
    "svm": {
      "uuid": "2272378d-eab2-11ed-913b-005056ac10bf",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/2272378d-eab2-11ed-913b-005056ac10bf"
        }
      }
    },
    "volume": {
      "uuid": "a44c8f5d-edde-11ed-8b6b-005056acde94",
      "name": "testVol4",
      "_links": {
        "self": {
```

```
          "href": "/api/storage/volumes/a44c8f5d-edde-11ed-8b6b-
005056acde94"
        }
      }
    },
    "uuid": "d66ff5ed-ede7-11ed-8b6b-005056acde94",
    "_links": {
      "self": {
        "href": "/api/storage/quota/rules/d66ff5ed-ede7-11ed-8b6b-
005056acde94"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/quota/rules?files.hard_limit=>5&#124;null"
  }
}
}
```

Retrieve quota policy rules for all FlexVol and FlexGroup volumes

GET `/storage/quota/rules`

Introduced In: 9.6

Retrieves quota policy rules configured for all FlexVol volumes and FlexGroup volumes.

Related ONTAP commands

- `quota policy rule show`

Parameters

Name	Type	In	Required	Description
qtree.name	string	query	False	Filter by qtree.name
qtree.id	integer	query	False	Filter by qtree.id
group.name	string	query	False	Filter by group.name
group.id	string	query	False	Filter by group.id

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
files.hard_limit	integer	query	False	Filter by files.hard_limit
files.soft_limit	integer	query	False	Filter by files.soft_limit
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
type	string	query	False	Filter by type
users.id	string	query	False	Filter by users.id
users.name	string	query	False	Filter by users.name
volume.uuid	string	query	False	Filter by volume.uuid
volume.name	string	query	False	Filter by volume.name
user_mapping	boolean	query	False	Filter by user_mapping
space.hard_limit	integer	query	False	Filter by space.hard_limit
space.soft_limit	integer	query	False	Filter by space.soft_limit
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[quota_rule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "group": {
        "id": "string",
        "name": "string"
      },
      "qtree": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 1,
        "name": "qt1"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "users": [
        {
          "id": "string",
          "name": "string"
```

```
        }
      ],
      "uuid": "5f1d13a7-f401-11e8-ac1a-005056a7c3b9",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

files

Name	Type	Description
hard_limit	integer	This parameter specifies the hard limit for files. This is valid in POST or PATCH.
soft_limit	integer	This parameter specifies the soft limit for files. This is valid in POST or PATCH.

group

This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.

Name	Type	Description
_links	_links	
id	integer	The unique identifier for a qtree.
name	string	The name of the qtree.

space

Name	Type	Description
hard_limit	integer	This parameter specifies the space hard limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.
soft_limit	integer	This parameter specifies the space soft limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

quota_rule

Name	Type	Description
_links	_links	
files	files	

Name	Type	Description
group	group	This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.
qtree	qtree	This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	This parameter specifies the quota policy rule type. This is required in POST only and can take either one of the "user", "group" or "tree" values.

Name	Type	Description
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.
users	array[users]	This parameter specifies the target user to which the user quota policy rule applies. This parameter takes single or multiple user names or identifiers. This parameter is valid only for the POST operation of a user quota policy rule. If this parameter is used as an input to create a group or a tree quota policy rule, the POST operation will fail with an appropriate error. For POST, this input parameter takes either a user name or a user identifier, not both. For default quota rules, the user name must be chosen and specified as "". For explicit user quota rules, this parameter can indicate either a user name or user identifier. The user name can be a UNIX user name or a Windows user name. If a name contains a space, enclose the entire value in quotes. A UNIX user name cannot include a backslash () or an @ sign; user names with these characters are treated as Windows names. The user identifier can be a UNIX user identifier or a Windows security identifier. For multi-user quota, this parameter can contain multiple user targets separated by a comma.
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a quota policy rule for a FlexVol or a FlexGroup volume

POST `/storage/quota/rules`

Introduced In: 9.6

Creates a quota policy rule for a FlexVol or a FlexGroup volume.

Important notes:

- Unlike CLI/ONTAPI, the `quota policy` input is not needed for POST.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the qtree.
- `volume.uuid` or `volume.name` - Existing volume in which to create the qtree.
- `type` - Quota type for the rule. This type can be `user`, `group`, or `tree`.
- `users.name` or `user.id` - If the quota type is user, this property takes the user name or user ID. For default user quota rules, the user name must be specified as "".
- `group.name` or `group.id` - If the quota type is group, this property takes the group name or group ID. For default group quota rules, the group name must be specified as "".
- `qtree.name` - Qtree for which to create the rule. For default tree rules, the qtree name must be specified as "".

Recommended optional properties

- `space.hard_limit` - Specifies the space hard limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes.

- `space.soft_limit` - Specifies the space soft limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes.
- `files.hard_limit` - Specifies the hard limit for files.
- `files.soft_limit` - Specifies the soft limit for files.
- `user_mapping` - Specifies the user_mapping. This property is valid only for quota policy rules of type `user`.

Related ONTAP commands

- `quota policy rule create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
files	files	
group	group	This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.
qtree	qtree	This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.

Name	Type	Description
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	This parameter specifies the quota policy rule type. This is required in POST only and can take either one of the "user", "group" or "tree" values.
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.
users	array[users]	This parameter specifies the target user to which the user quota policy rule applies. This parameter takes single or multiple user names or identifiers. This parameter is valid only for the POST operation of a user quota policy rule. If this parameter is used as an input to create a group or a tree quota policy rule, the POST operation will fail with an appropriate error. For POST, this input parameter takes either a user name or a user identifier, not both. For default quota rules, the user name must be chosen and specified as "". For explicit user quota rules, this parameter can indicate either a user name or user identifier. The user name can be a UNIX user name or a Windows user name. If a name contains a space, enclose the entire value in quotes. A UNIX user name cannot include a backslash () or an @ sign; user names with these characters are treated as Windows names. The user identifier can be a UNIX user identifier or a Windows security identifier. For multi-user quota, this parameter can contain multiple user targets separated by a comma.

Name	Type	Description
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.
volume	volume	

Example request

```
{
  "group": {
    "id": "string",
    "name": "string"
  },
  "qtree": {
    "id": 1,
    "name": "qt1"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "users": [
    {
      "id": "string",
      "name": "string"
    }
  ],
  "uuid": "5f1d13a7-f401-11e8-ac1a-005056a7c3b9",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917927	The specified volume was not found.
918232	Either `volume.name` or `volume.uuid` must be provided.
918236	The specified `volume.uuid` and `volume.name` refer to different volumes.
2621462	The specified SVM does not exist.
2621706	The specified `svm.uuid` and `svm.name` do not refer to the same SVM.
2621707	No SVM was specified. Either `svm.name` or `svm.uuid` must be supplied.
5308469	User mapping can be specified only for a user quota rule.

Error Code	Description
5308496	The specified user name was not found.
5308501	Mapping from Windows user to UNIX user for user rule was unsuccessful.
5308502	Mapping from UNIX user to Windows user for user rule was unsuccessful.
5308552	Failed to get default quota policy name for SVM.
5308561	Failed to obtain volume quota state or invalid quota state obtained for volume.
5308562	users is a required input for creating a user rule and group is not allowed.
5308563	group is a required input for creating a group rule and users is not allowed.
5308564	qtree.name is a required input for creating a tree rule and users and group are not allowed.
5308565	Only one of name or id is allowed for each entry in the users array.
5308566	Only one of name or id is allowed for group.
5308568	Quota policy rule create operation succeeded, but quota resize failed due to internal error. To activate the rule, disable and enable quotas for this volume.
5308571	Quota policy rule create operation succeeded, but quota resize is skipped. To activate the rule, disable and enable quotas for this volume.
5308573	Input value is greater than limit for field.
5308574	Input value is out of range for field.
5308575	Input value is incorrectly larger than listed field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

files

Name	Type	Description
hard_limit	integer	This parameter specifies the hard limit for files. This is valid in POST or PATCH.
soft_limit	integer	This parameter specifies the soft limit for files. This is valid in POST or PATCH.

group

This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.

Name	Type	Description
id	integer	The unique identifier for a qtree.

Name	Type	Description
name	string	The name of the qtree.

space

Name	Type	Description
hard_limit	integer	This parameter specifies the space hard limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.
soft_limit	integer	This parameter specifies the space soft limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

quota_rule

Name	Type	Description
files	files	

Name	Type	Description
group	group	This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.
qtree	qtree	This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	This parameter specifies the quota policy rule type. This is required in POST only and can take either one of the "user", "group" or "tree" values.

Name	Type	Description
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.
users	array[users]	This parameter specifies the target user to which the user quota policy rule applies. This parameter takes single or multiple user names or identifiers. This parameter is valid only for the POST operation of a user quota policy rule. If this parameter is used as an input to create a group or a tree quota policy rule, the POST operation will fail with an appropriate error. For POST, this input parameter takes either a user name or a user identifier, not both. For default quota rules, the user name must be chosen and specified as "". For explicit user quota rules, this parameter can indicate either a user name or user identifier. The user name can be a UNIX user name or a Windows user name. If a name contains a space, enclose the entire value in quotes. A UNIX user name cannot include a backslash () or an @ sign; user names with these characters are treated as Windows names. The user identifier can be a UNIX user identifier or a Windows security identifier. For multi-user quota, this parameter can contain multiple user targets separated by a comma.
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.
volume	volume	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a quota policy rule

DELETE `/storage/quota/rules/{uuid}`

Introduced In: 9.7

Deletes a quota policy rule.

Related ONTAP commands

- `quota policy rule delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Rule UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5308545	The specified quota rule UUID is invalid.
5308561	Failed to obtain volume quota state or invalid quota state obtained for volume.
5308569	Quota policy rule delete operation succeeded, but quota resize failed due to internal error.
5308572	Quota policy rule delete operation succeeded, however the rule is still being enforced. To stop enforcing the rule, disable quotas and enable them again for this volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve quota policy rule properties

GET `/storage/quota/rules/{uuid}`

Introduced In: 9.7

Retrieves properties for a specific quota policy rule.

Related ONTAP commands

- `quota policy rule show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Rule UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
files	files	
group	group	This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.

Name	Type	Description
qtree	qtree	This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.
space	space	
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	This parameter specifies the quota policy rule type. This is required in POST only and can take either one of the "user", "group" or "tree" values.
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.

Name	Type	Description
users	array[users]	This parameter specifies the target user to which the user quota policy rule applies. This parameter takes single or multiple user names or identifiers. This parameter is valid only for the POST operation of a user quota policy rule. If this parameter is used as an input to create a group or a tree quota policy rule, the POST operation will fail with an appropriate error. For POST, this input parameter takes either a user name or a user identifier, not both. For default quota rules, the user name must be chosen and specified as "". For explicit user quota rules, this parameter can indicate either a user name or user identifier. The user name can be a UNIX user name or a Windows user name. If a name contains a space, enclose the entire value in quotes. A UNIX user name cannot include a backslash () or an @ sign; user names with these characters are treated as Windows names. The user identifier can be a UNIX user identifier or a Windows security identifier. For multi-user quota, this parameter can contain multiple user targets separated by a comma.
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "group": {
    "id": "string",
    "name": "string"
  },
  "qtree": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 1,
    "name": "qt1"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "users": [
    {
      "id": "string",
      "name": "string"
    }
  ],
  "uuid": "5f1d13a7-f401-11e8-ac1a-005056a7c3b9",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
```

```
    }
  }
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5308544	The specified quota rule UUID is invalid.
5308545	Unable to retrieve rule for the specified quota rule UUID.
5308576	Parameter `show_default_records` only allowed for GET collection.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

files

Name	Type	Description
hard_limit	integer	This parameter specifies the hard limit for files. This is valid in POST or PATCH.
soft_limit	integer	This parameter specifies the soft limit for files. This is valid in POST or PATCH.

group

This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.

Name	Type	Description
_links	_links	
id	integer	The unique identifier for a qtree.
name	string	The name of the qtree.

space

Name	Type	Description
hard_limit	integer	This parameter specifies the space hard limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.
soft_limit	integer	This parameter specifies the space soft limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Update quota policy rule properties

PATCH `/storage/quota/rules/{uuid}`

Introduced In: 9.7

Updates properties of a specific quota policy rule.

Important notes:

- The quota resize functionality is supported with the PATCH operation.
- Quota resize allows you to modify the quota limits, directly in the filesystem.
- The quota must be enabled on a FlexVol or a FlexGroup volume for `quota resize` to take effect.
- If the quota is disabled on the volume, the quota policy rule PATCH API modifies the rule, but this does not affect the limits in the filesystem.

Related ONTAP commands

- `quota policy rule modify`
- `quota resize`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Rule UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
files	files	
space	space	
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.

Name	Type	Description
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.

Example request

```
{
  "uuid": "5f1d13a7-f401-11e8-ac1a-005056a7c3b9"
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5308478	User mapping can only be turned on for UNIX usernames or Windows account names.
5308501	Mapping from Windows user to UNIX user for user rule was unsuccessful.
5308502	Mapping from UNIX user to Windows user for user rule was unsuccessful.
5308545	The specified quota rule UUID is invalid.
5308561	Failed to obtain volume quota state or invalid quota state obtained for volume.
5308567	Quota policy rule modify operation succeeded, but quota resize failed due to internal error.
5308573	Input value is greater than limit for field.
5308574	Input value is out of range for field.
5308575	Input value is incorrectly larger than listed field.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

files

Name	Type	Description
hard_limit	integer	This parameter specifies the hard limit for files. This is valid in POST or PATCH.
soft_limit	integer	This parameter specifies the soft limit for files. This is valid in POST or PATCH.

group

This parameter specifies the target group to which the group quota policy rule applies. This parameter takes a group name or identifier. This parameter is only valid for the POST operation of a group quota policy rule. The POST operation will fail with an appropriate error if this parameter is used as an input to create a user or a tree quota policy rule. This input parameter for POST takes either a group name or a group identifier, but not both. For default quota rules, the group name must be chosen and should be specified as "". For explicit group quota rules, this parameter can contain a UNIX group name or a UNIX group identifier.

Name	Type	Description
id	string	Quota target group ID
name	string	Quota target group name

qtree

This parameter specifies the target qtree to which the user/group/tree quota policy rule applies. For a user/group quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST. For a user/group quota policy rule at volume level, this parameter is not valid in GET or POST. For a tree quota policy rule, this parameter is mandatory and is valid in both POST and GET. For a default tree quota policy rule, this parameter needs to be specified as "". For a tree quota policy rule at qtree level, this parameter takes a qtree name and is valid in GET or POST.

Name	Type	Description
id	integer	The unique identifier for a qtree.

Name	Type	Description
name	string	The name of the qtree.

space

Name	Type	Description
hard_limit	integer	This parameter specifies the space hard limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.
soft_limit	integer	This parameter specifies the space soft limit, in bytes. If less than 1024 bytes, the value is rounded up to 1024 bytes. Valid in POST or PATCH. For a POST operation where the parameter is either empty or set to -1, no limit is applied. For a PATCH operation where a limit is configured, use a value of -1 to clear the limit.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

users

Name	Type	Description
id	string	Quota target user ID
name	string	Quota target user name

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

quota_rule

Name	Type	Description
files	files	
space	space	
user_mapping	boolean	This parameter enables user mapping for user quota policy rules. This is valid in POST or PATCH for user quota policy rules only.
uuid	string	Unique identifier for the quota policy rule. This field is generated when the quota policy rule is created.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage shelves

Storage shelves endpoint overview

Retrieving storage shelf information

The storage shelf GET API retrieves all of the shelves in the cluster.

Examples

1) Retrieve a list of shelves from the cluster

The following example shows the response with a list of shelves in the cluster:

```
# The API:
/api/storage/shelves
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/storage/shelves" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uid": "3109174803597886800",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/3109174803597886800"
      }
    }
  },
  {
    "uid": "9237728366621690448",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/9237728366621690448"
      }
    }
  },
  {
    "uid": "9946762738829886800",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/9946762738829886800"
      }
    }
  },
  {
    "uid": "10318311901725526608",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/10318311901725526608"
      }
    }
  },
  {
    "uid": "13477584846688355664",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/13477584846688355664"
      }
    }
```

```
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/storage/shelves/"
  }
}
}
```

2) Retrieve a specific shelf from the cluster

The following example shows the response of the requested shelf. If there is no shelf with the requested uid, an error is returned.

```
# The API:
/api/storage/shelves/{uid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/shelves/3109174803597886800" -H
"accept: application/hal+json"

# The response:
{
"uid": "3109174803597886800",
"name": "6.10",
"id": "10",
"serial_number": "SHU0954292N0HAH",
"model": "DS4246",
"module_type": "iom6",
"internal": false,
"local": true,
"manufacturer": {
  "name": "NETAPP"
},
"state": "ok",
"connection_type": "sas",
"disk_count": 24,
"raw-capacity": 5157308772,
"location_led": "off",
"paths": [
  {
    "name": "0e",
```

```
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0e"
      }
    }
  },
  {
    "name": "0g",
    "node": {
      "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
      "name": "node-1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0530d6c1-8c6d-11e8-907f-
00a0985a72ee"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/ports/0530d6c1-8c6d-11e8-907f-
00a0985a72ee/0g"
      }
    }
  }
],
"bays": [
  {
    "id": 0,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 1,
```

```
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 2,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 3,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 4,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 5,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 6,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 7,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 8,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
```

```
  {
    "id": 9,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 10,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 11,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 12,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 13,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 14,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 15,
    "has_disk": true,
    "type": "single_disk",
    "state": "ok"
  },
  {
    "id": 16,
    "has_disk": true,
    "type": "single_disk",
```

```
      "state": "ok"
    },
    {
      "id": 17,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 18,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 19,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 20,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 21,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 22,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    },
    {
      "id": 23,
      "has_disk": true,
      "type": "single_disk",
      "state": "ok"
    }
  ],
  "frus": [
```

```
  {
    "type": "module",
    "id": 0,
    "state": "ok",
    "part_number": "111-00690+B2",
    "serial_number": "8001900099",
    "firmware_version": "0191",
    "installed": true
  },
  {
    "type": "module",
    "id": 1,
    "state": "ok",
    "part_number": "111-00190+B0",
    "serial_number": "7903785183",
    "firmware_version": "0191",
    "installed": true
  },
  {
    "type": "psu",
    "id": 1,
    "state": "ok",
    "part_number": "0082562-12",
    "serial_number": "PMW82562007513E",
    "firmware_version": "0311",
    "installed": true,
    "psu": {
      "model": "9C"
    }
  },
  {
    "type": "psu",
    "id": 2,
    "state": "ok",
    "part_number": "0082562-12",
    "serial_number": "PMW825620075138",
    "firmware_version": "0311",
    "installed": true,
    "psu": {
      "model": "9C"
    }
  },
  {
    "type": "psu",
    "id": 3,
    "state": "ok",
```

```
    "part_number": "0082562-12",
    "serial_number": "PMW8256200750BA",
    "firmware_version": "0311",
    "installed": true,
    "psu": {
      "model": "9C"
    }
  },
  {
    "type": "psu",
    "id": 4,
    "state": "ok",
    "part_number": "0082562-12",
    "serial_number": "PMW8256200750A2",
    "firmware_version": "0311",
    "installed": true,
    "psu": {
      "model": "9C"
    }
  }
],
"ports": [
  {
    "id": 0,
    "module_id": "a",
    "designator": "square",
    "state": "connected",
    "internal": false,
    "wwn": "500A098000C9EDBF",
    "speed": 100,
    "cable": {
      "identifier": "5001086000702488-500a098000c9edbf",
      "part_number": "112-00430+A0",
      "length": "2m",
      "serial_number": "APF16510229807"
    },
    "remote": {
      "wwn": "5001086000702488",
      "phy": "08"
    }
  },
  {
    "id": 1,
    "module_id": "a",
    "designator": "circle",
    "state": "connected",
```

```
    "internal": false,
    "wwn": "500A098000C9EDBF",
    "speed": 100,
    "cable": {
      "identifier": "500a098000d5c4bf-500a098000c9edbf",
      "part_number": "112-00176+A0",
      "length": "0.5-1.0m",
      "serial_number": "APF133917610YT"
    },
    "remote": {
      "wwn": "500A098000D5C4BF",
      "phy": "00"
    }
  },
  {
    "id": 2,
    "module_id": "b",
    "designator": "square",
    "state": "connected",
    "internal": false,
    "wwn": "500A098004F208BF",
    "speed": 100,
    "cable": {
      "identifier": "5001086000702648-500a098004f208bf",
      "part_number": "112-00430+A0",
      "length": "2m",
      "serial_number": "APF16510229540"
    },
    "remote": {
      "wwn": "5001086000702648",
      "phy": "08"
    }
  },
  {
    "id": 3,
    "module_id": "b",
    "designator": "circle",
    "state": "connected",
    "internal": false,
    "wwn": "500A098004F208BF",
    "speed": 100,
    "cable": {
      "identifier": "500a0980062ba33f-500a098004f208bf",
      "part_number": "112-00176+20",
      "length": "0.5-1.0m",
      "serial_number": "832210017"
```

```
    },
    "remote": {
      "wwn": "500A0980062BA33F",
      "phy": "00"
    }
  }
],
"fans": [
  {
    "id": 1,
    "location": "rear of the shelf on the upper left power supply",
    "rpm": 3150,
    "state": "ok",
    "installed": true
  },
  {
    "id": 2,
    "location": "rear of the shelf on the upper left power supply",
    "rpm": 3000,
    "state": "ok",
    "installed": true
  },
  {
    "id": 3,
    "location": "rear of the shelf on the upper right power supply",
    "rpm": 3220,
    "state": "ok",
    "installed": true
  },
  {
    "id": 4,
    "location": "rear of the shelf on the upper right power supply",
    "rpm": 3000,
    "state": "ok",
    "installed": true
  },
  {
    "id": 5,
    "location": "rear of the shelf on the lower left power supply",
    "rpm": 3000,
    "state": "ok",
    "installed": true
  },
  {
    "id": 6,
    "location": "rear of the shelf on the lower left power supply",
```

```
    "rpm": 3150,
    "state": "ok",
    "installed": true
  },
  {
    "id": 7,
    "location": "rear of the shelf on the lower right power supply",
    "rpm": 3150,
    "state": "ok",
    "installed": true
  },
  {
    "id": 8,
    "location": "rear of the shelf on the lower right power supply",
    "rpm": 3000,
    "state": "ok",
    "installed": true
  }
],
"temperature_sensors": [
  {
    "id": 1,
    "location": "front of the shelf on the left, on the OPS panel",
    "temperature": 20,
    "ambient": true,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 42,
        "warning": 40
      },
      "low": {
        "critical": 0,
        "warning": 5
      }
    }
  },
  {
    "id": 2,
    "location": "inside of the shelf on the midplane",
    "temperature": 29,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
```

```
      "high": {
        "critical": 55,
        "warning": 50
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 3,
    "location": "rear of the shelf on the upper left power supply",
    "temperature": 33,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 55,
        "warning": 50
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 4,
    "location": "rear of the shelf on the upper left power supply",
    "temperature": 41,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 70,
        "warning": 65
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
```

```
  {
    "id": 5,
    "location": "rear of the shelf on the upper right power supply",
    "temperature": 32,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 55,
        "warning": 50
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 6,
    "location": "rear of the shelf on the upper right power supply",
    "temperature": 41,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 70,
        "warning": 65
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 7,
    "location": "rear of the shelf on the lower left power supply",
    "temperature": 34,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 55,
```

```
        "warning": 50
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 8,
    "location": "rear of the shelf on the lower left power supply",
    "temperature": 45,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 70,
        "warning": 65
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 9,
    "location": "rear of the shelf on the lower right power supply",
    "temperature": 30,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 55,
        "warning": 50
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 10,
```

```
    "location": "rear of the shelf on the lower right power supply",
    "temperature": 40,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 70,
        "warning": 65
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 11,
    "location": "rear of the shelf at the top left, on shelf module A",
    "temperature": 30,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 60,
        "warning": 55
      },
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  },
  {
    "id": 12,
    "location": "rear of the shelf at the top right, on shelf module B",
    "temperature": 33,
    "ambient": false,
    "state": "ok",
    "installed": true,
    "threshold": {
      "high": {
        "critical": 60,
        "warning": 55
      },
```

```
      "low": {
        "critical": 5,
        "warning": 10
      }
    }
  }
],
"voltage_sensors": [
  {
    "id": 1,
    "location": "rear of the shelf on the upper left power supply",
    "voltage": 5.11,
    "state": "ok",
    "installed": true
  },
  {
    "id": 2,
    "location": "rear of the shelf on the upper left power supply",
    "voltage": 12.38,
    "state": "ok",
    "installed": true
  },
  {
    "id": 3,
    "location": "rear of the shelf on the upper right power supply",
    "voltage": 5.11,
    "state": "ok",
    "installed": true
  },
  {
    "id": 4,
    "location": "rear of the shelf on the upper right power supply",
    "voltage": 12.26,
    "state": "ok",
    "installed": true
  },
  {
    "id": 5,
    "location": "rear of the shelf on the lower left power supply",
    "voltage": 5.7,
    "state": "ok",
    "installed": true
  },
  {
    "id": 6,
    "location": "rear of the shelf on the lower left power supply",
```

```
    "voltage": 12.26,
    "state": "ok",
    "installed": true
  },
  {
    "id": 7,
    "location": "rear of the shelf on the lower right power supply",
    "voltage": 5.15,
    "state": "ok",
    "installed": true
  },
  {
    "id": 8,
    "location": "rear of the shelf on the lower right power supply",
    "voltage": 12.3,
    "state": "ok",
    "installed": true
  }
],
"current_sensors": [
  {
    "id": 1,
    "location": "rear of the shelf on the upper left power supply",
    "current": 6990,
    "state": "ok",
    "installed": true
  },
  {
    "id": 2,
    "location": "rear of the shelf on the upper left power supply",
    "current": 5150,
    "state": "ok",
    "installed": true
  },
  {
    "id": 3,
    "location": "rear of the shelf on the upper right power supply",
    "current": 4600,
    "state": "ok",
    "installed": true
  },
  {
    "id": 4,
    "location": "rear of the shelf on the upper right power supply",
    "current": 4800,
    "state": "ok",
```

```
    "installed": true
  },
  {
    "id": 5,
    "location": "rear of the shelf on the lower left power supply",
    "current": 4140,
    "state": "ok",
    "installed": true
  },
  {
    "id": 6,
    "location": "rear of the shelf on the lower left power supply",
    "current": 7770,
    "state": "ok",
    "installed": true
  },
  {
    "id": 7,
    "location": "rear of the shelf on the lower right power supply",
    "current": 4140,
    "state": "ok",
    "installed": true
  },
  {
    "id": 8,
    "location": "rear of the shelf on the lower right power supply",
    "current": 4720,
    "state": "ok",
    "installed": true
  }
],
"acps": [
  {
    "enabled": true,
    "channel": "in_band",
    "connection_state": "active",
    "node": {
      "uuid": "cf62d23c-6100-11eb-9852-00a098fd725d",
      "name": "cat33-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/cf62d23c-6100-11eb-9852-
00a098fd725d"
        }
      }
    }
```

```
  },
  {
    "enabled": true,
    "channel": "in_band",
    "connection_state": "active",
    "node": {
      "uuid": "d0892dd7-6100-11eb-9cdb-d039ea010238",
      "name": "cat33-02",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/d0892dd7-6100-11eb-9cdb-
d039ea010238"
        }
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/storage/shelves/3109174803597886800"
  }
}
}
```


Modifying storage shelf

The storage shelf PATCH API modifies the shelf location LED.

Example

```
# The API:
/api/storage/shelves

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/shelves/3109174803597886800"
-H "accept: application/hal+json" -H "Content-Type: application/hal+json"
-d '{"location_led": "on"}'

# The response:
{
}
```

Retrieve shelves

GET `/storage/shelves`

Introduced In: 9.6

Retrieves a collection of shelves.

Related ONTAP commands

- `storage shelf show`
- `storage shelf port show`
- `storage shelf drawer show`
- `storage shelf drawer show-slot`
- `storage shelf acp show`

Learn more

- DOC /storage/shelves

Parameters

Name	Type	In	Required	Description
acps.connection_state	string	query	False	Filter by acps.connection_state • Introduced in: 9.10

Name	Type	In	Required	Description
acps.subnet	string	query	False	Filter by acps.subnet • Introduced in: 9.10
acps.enabled	boolean	query	False	Filter by acps.enabled • Introduced in: 9.10
acps.channel	string	query	False	Filter by acps.channel • Introduced in: 9.10
acps.port	string	query	False	Filter by acps.port • Introduced in: 9.10
acps.error.severity	string	query	False	Filter by acps.error.severity • Introduced in: 9.10
acps.error.type	string	query	False	Filter by acps.error.type • Introduced in: 9.10
acps.error.reason.code	string	query	False	Filter by acps.error.reason.code • Introduced in: 9.10
acps.error.reason.message	string	query	False	Filter by acps.error.reason.message • Introduced in: 9.10

Name	Type	In	Required	Description
acps.error.reason.arguments.code	string	query	False	Filter by acps.error.reason.arguments.code • Introduced in: 9.10
acps.error.reason.arguments.message	string	query	False	Filter by acps.error.reason.arguments.message • Introduced in: 9.10
acps.address	string	query	False	Filter by acps.address • Introduced in: 9.10
acps.node.uuid	string	query	False	Filter by acps.node.uuid • Introduced in: 9.10
acps.node.name	string	query	False	Filter by acps.node.name • Introduced in: 9.10
acps.netmask	string	query	False	Filter by acps.netmask • Introduced in: 9.10
manufacturer.name	string	query	False	Filter by manufacturer.name • Introduced in: 9.10
uid	string	query	False	Filter by uid
connection_type	string	query	False	Filter by connection_type

Name	Type	In	Required	Description
temperature_sensors.id	integer	query	False	Filter by temperature_sensors.id • Introduced in: 9.10
temperature_sensors.state	string	query	False	Filter by temperature_sensors.state • Introduced in: 9.10
temperature_sensors.threshold.high.warning	integer	query	False	Filter by temperature_sensors.threshold.high.warning • Introduced in: 9.10
temperature_sensors.threshold.high.critical	integer	query	False	Filter by temperature_sensors.threshold.high.critical • Introduced in: 9.10
temperature_sensors.threshold.low.warning	integer	query	False	Filter by temperature_sensors.threshold.low.warning • Introduced in: 9.10
temperature_sensors.threshold.low.critical	integer	query	False	Filter by temperature_sensors.threshold.low.critical • Introduced in: 9.10

Name	Type	In	Required	Description
temperature_sensors.location	string	query	False	Filter by temperature_sensors.location • Introduced in: 9.10
temperature_sensors.installed	boolean	query	False	Filter by temperature_sensors.installed • Introduced in: 9.13
temperature_sensors.temperature	integer	query	False	Filter by temperature_sensors.temperature • Introduced in: 9.10
temperature_sensors.ambient	boolean	query	False	Filter by temperature_sensors.ambient • Introduced in: 9.10
local	boolean	query	False	Filter by local • Introduced in: 9.8
location_led	string	query	False	Filter by location_led • Introduced in: 9.10
ports.internal	boolean	query	False	Filter by ports.internal
ports.mac_address	string	query	False	Filter by ports.mac_address
ports.cable.length	string	query	False	Filter by ports.cable.length

Name	Type	In	Required	Description
ports.cable.part_number	string	query	False	Filter by ports.cable.part_number
ports.cable.serial_number	string	query	False	Filter by ports.cable.serial_number
ports.cable.identifier	string	query	False	Filter by ports.cable.identifier
ports.remote.device	string	query	False	Filter by ports.remote.device • Introduced in: 9.8
ports.remote.port	string	query	False	Filter by ports.remote.port
ports.remote.mac_address	string	query	False	Filter by ports.remote.mac_address
ports.remote.chassis	string	query	False	Filter by ports.remote.chassis
ports.remote.phy	string	query	False	Filter by ports.remote.phy
ports.remote.wwn	string	query	False	Filter by ports.remote.wwn
ports.wwn	string	query	False	Filter by ports.wwn
ports.id	integer	query	False	Filter by ports.id
ports.speed	integer	query	False	Filter by ports.speed • Introduced in: 9.17
ports.designator	string	query	False	Filter by ports.designator

Name	Type	In	Required	Description
ports.module_id	string	query	False	Filter by ports.module_id
ports.state	string	query	False	Filter by ports.state
id	string	query	False	Filter by id
disk_count	integer	query	False	Filter by disk_count
drawers.state	string	query	False	Filter by drawers.state
drawers.disk_count	integer	query	False	Filter by drawers.disk_count
drawers.error	string	query	False	Filter by drawers.error
drawers.serial_number	string	query	False	Filter by drawers.serial_number
drawers.part_number	string	query	False	Filter by drawers.part_number
drawers.closed	boolean	query	False	Filter by drawers.closed
drawers.id	integer	query	False	Filter by drawers.id
name	string	query	False	Filter by name
internal	boolean	query	False	Filter by internal
paths.name	string	query	False	Filter by paths.name
paths.node.uuid	string	query	False	Filter by paths.node.uuid
paths.node.name	string	query	False	Filter by paths.node.name

Name	Type	In	Required	Description
errors.reason.code	string	query	False	Filter by errors.reason.code • Introduced in: 9.9
errors.reason.message	string	query	False	Filter by errors.reason.message • Introduced in: 9.9
errors.reason.arguments.code	string	query	False	Filter by errors.reason.arguments.code • Introduced in: 9.10
errors.reason.arguments.message	string	query	False	Filter by errors.reason.arguments.message • Introduced in: 9.10
serial_number	string	query	False	Filter by serial_number
current_sensors.current	integer	query	False	Filter by current_sensors.current • Introduced in: 9.10
current_sensors.id	integer	query	False	Filter by current_sensors.id • Introduced in: 9.10
current_sensors.state	string	query	False	Filter by current_sensors.state • Introduced in: 9.10

Name	Type	In	Required	Description
current_sensors.installed	boolean	query	False	Filter by current_sensors.installed • Introduced in: 9.13
current_sensors.location	string	query	False	Filter by current_sensors.location • Introduced in: 9.10
module_type	string	query	False	Filter by module_type
model	string	query	False	Filter by model
bays.id	integer	query	False	Filter by bays.id
bays.drawer.id	integer	query	False	Filter by bays.drawer.id • Introduced in: 9.11
bays.drawer.slot	integer	query	False	Filter by bays.drawer.slot • Introduced in: 9.11
bays.type	string	query	False	Filter by bays.type
bays.has_disk	boolean	query	False	Filter by bays.has_disk
bays.state	string	query	False	Filter by bays.state
raw_capacity	integer	query	False	Filter by raw_capacity • Introduced in: 9.17

Name	Type	In	Required	Description
voltage_sensors.state	string	query	False	Filter by voltage_sensors.state • Introduced in: 9.10
voltage_sensors.location	string	query	False	Filter by voltage_sensors.location • Introduced in: 9.10
voltage_sensors.installed	boolean	query	False	Filter by voltage_sensors.installed • Introduced in: 9.13
voltage_sensors.voltage	number	query	False	Filter by voltage_sensors.voltage • Introduced in: 9.10
voltage_sensors.id	integer	query	False	Filter by voltage_sensors.id • Introduced in: 9.10
vendor.product	string	query	False	Filter by vendor.product • Introduced in: 9.8
vendor.manufacturer	string	query	False	Filter by vendor.manufacturer • Introduced in: 9.8

Name	Type	In	Required	Description
vendor.serial_number	string	query	False	Filter by vendor.serial_number • Introduced in: 9.8
vendor.part_number	string	query	False	Filter by vendor.part_number • Introduced in: 9.8
vendor.name	string	query	False	Filter by vendor.name • Introduced in: 9.10
frus.serial_number	string	query	False	Filter by frus.serial_number
frus.psu.power_rating	integer	query	False	Filter by frus.psu.power_rating • Introduced in: 9.10
frus.psu.crest_factor	integer	query	False	Filter by frus.psu.crest_factor • Introduced in: 9.10
frus.psu.power_drawn	integer	query	False	Filter by frus.psu.power_drawn • Introduced in: 9.10
frus.psu.model	string	query	False	Filter by frus.psu.model • Introduced in: 9.10
frus.type	string	query	False	Filter by frus.type

Name	Type	In	Required	Description
frus.id	integer	query	False	Filter by frus.id
frus.part_number	string	query	False	Filter by frus.part_number
frus.installed	boolean	query	False	Filter by frus.installed • Introduced in: 9.10
frus.state	string	query	False	Filter by frus.state
frus.firmware_version	string	query	False	Filter by frus.firmware_version
fans.state	string	query	False	Filter by fans.state • Introduced in: 9.9
fans.installed	boolean	query	False	Filter by fans.installed • Introduced in: 9.13
fans.location	string	query	False	Filter by fans.location • Introduced in: 9.9
fans.id	integer	query	False	Filter by fans.id • Introduced in: 9.9
fans.rpm	integer	query	False	Filter by fans.rpm • Introduced in: 9.9
state	string	query	False	Filter by state

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[shelf]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "acps": [
        {
          "address": "192.168.1.104",
          "channel": "out_of_band",
          "connection_state": "full_connectivity",
          "error": {
            "reason": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
              ],
              "code": "4",
              "message": "entry doesn't exist"
            },
            "severity": "string",
            "type": "string"
          },
          "netmask": "255.255.252.0",
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "port": "e0P",
          "subnet": "192.168.0.1"
        }
```

```
      ],
      "bays": [
        {
          "drawer": {
            "id": 1,
            "slot": 0
          },
          "id": 0,
          "state": "ok",
          "type": "single_disk"
        }
      ],
      "connection_type": "sas",
      "current_sensors": [
        {
          "current": 14410,
          "id": 1,
          "installed": 1,
          "location": "rear of the shelf on the lower left power
supply",
          "state": "ok"
        }
      ],
      "disk_count": 12,
      "drawers": [
        {
          "disk_count": 12,
          "error": "string",
          "part_number": "111-03071",
          "serial_number": "021604008263",
          "state": "ok"
        }
      ],
      "errors": [
        {
          "reason": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          }
        }
```

```
      ],
      "fans": [
        {
          "id": 1,
          "installed": 1,
          "location": "rear of the shelf on the lower left power
supply",
          "rpm": 3020,
          "state": "ok"
        }
      ],
      "frus": [
        {
          "firmware_version": "0191",
          "installed": 1,
          "part_number": "111-00690+A2",
          "psu": {
            "crest_factor": 92,
            "model": "00",
            "power_drawn": 210,
            "power_rating": 1600
          },
          "serial_number": "8000166294",
          "state": "error",
          "type": "module"
        }
      ],
      "id": "1",
      "location_led": "off",
      "manufacturer": {
        "name": "NETAPP"
      },
      "model": "DS2246",
      "module_type": "iom6",
      "name": "1.1",
      "paths": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "2a",
          "node": {
            "_links": {
              "self": {
```

```
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "ports": [
        {
          "cable": {
            "identifier": "500a0980000b6c3f-50000d1703544b80",
            "length": "2m",
            "part_number": "112-00431+A0",
            "serial_number": "616930439"
          },
          "designator": "square",
          "id": 0,
          "mac_address": "string",
          "module_id": "a",
          "remote": {
            "chassis": "string",
            "device": "string",
            "mac_address": "string",
            "phy": "12",
            "port": "string",
            "wwn": "50000D1703544B80"
          },
          "speed": 100,
          "state": "connected",
          "wwn": "500A0980000B6C3F"
        }
      ],
      "raw_capacity": 5157308772,
      "serial_number": "SHFMS1514000895",
      "state": "ok",
      "temperature_sensors": [
        {
          "ambient": "",
          "id": 1,
          "installed": 1,
          "location": "temp sensor on midplane left",
          "state": "ok",
          "temperature": 32,
          "threshold": {
            "high": {
```

```
                "critical": 60,
                "warning": 55
              },
              "low": {
                "critical": 0,
                "warning": 5
              }
            }
          }
        ],
        "uid": "7777841915827391056",
        "vendor": {
          "manufacturer": "XYZ",
          "name": "XYZ",
          "part_number": "A92831142733",
          "product": "LS2246",
          "serial_number": "891234572210221"
        },
        "voltage_sensors": [
          {
            "id": 1,
            "installed": 1,
            "location": "rear of the shelf on the lower left power
supply",
            "state": "ok",
            "voltage": 12.18
          }
        ]
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Error object is populated when connection_state becomes non-optimal

Name	Type	Description
reason	error	
severity	string	
type	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

acps

Name	Type	Description
address	string	
channel	string	
connection_state	string	
enabled	boolean	
error	error	Error object is populated when connection_state becomes non-optimal
netmask	string	
node	node	
port	string	
subnet	string	

drawer

Name	Type	Description
id	integer	The drawer containing this bay
slot	integer	The drawer slot for this bay

bays

Name	Type	Description
drawer	drawer	
has_disk	boolean	
id	integer	
state	string	
type	string	

current_sensors

Name	Type	Description
current	integer	Current, in milliamps
id	integer	
installed	boolean	
location	string	
state	string	

drawers

Name	Type	Description
closed	boolean	
disk_count	integer	
error	string	
id	integer	
part_number	string	
serial_number	string	
state	string	

errors

Name	Type	Description
reason	error	

fans

Name	Type	Description
id	integer	
installed	boolean	
location	string	
rpm	integer	
state	string	

psu

Name	Type	Description
crest_factor	integer	The ratio of the peak voltage to the root-mean-square voltage
model	string	

Name	Type	Description
power_drawn	integer	Power drawn, in watts
power_rating	integer	Power rating, in watts

frus

Name	Type	Description
firmware_version	string	
id	integer	
installed	boolean	
part_number	string	
psu	psu	
serial_number	string	
state	string	
type	string	

manufacturer

Name	Type	Description
name	string	

paths

Storage port

Name	Type	Description
_links	_links	
name	string	
node	node	

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	

remote

Name	Type	Description
chassis	string	
device	string	
mac_address	string	
phy	string	
port	string	
wwn	string	

ports

Name	Type	Description
cable	cable	
designator	string	
id	integer	
internal	boolean	
mac_address	string	
module_id	string	
remote	remote	
speed	integer	
state	string	
wwn	string	

high

Name	Type	Description
critical	integer	High critical threshold, in degrees Celsius
warning	integer	High warning threshold, in degrees Celsius

low

Name	Type	Description
critical	integer	Low critical threshold, in degrees Celsius
warning	integer	Low warning threshold, in degrees Celsius

threshold

Name	Type	Description
high	high	
low	low	

temperature_sensors

Name	Type	Description
ambient	boolean	Sensor that measures the ambient temperature
id	integer	
installed	boolean	
location	string	
state	string	
temperature	integer	Temperature, in degrees Celsius
threshold	threshold	

vendor

Name	Type	Description
manufacturer	string	Support for this field will be removed in a future release. Please use vendor.name for this field.
name	string	
part_number	string	Part number
product	string	Product name
serial_number	string	Serial number

voltage_sensors

Name	Type	Description
id	integer	
installed	boolean	
location	string	
state	string	

Name	Type	Description
voltage	number	Voltage, in volts

shelf

Name	Type	Description
acps	array[acps]	Alternate Control Paths to ACP processors/functions in shelf modules and expanders
bays	array[bays]	
connection_type	string	
current_sensors	array[current_sensors]	
disk_count	integer	
drawers	array[drawers]	
errors	array[errors]	
fans	array[fans]	
frus	array[frus]	
id	string	
internal	boolean	
local	boolean	
location_led	string	
manufacturer	manufacturer	
model	string	
module_type	string	
name	string	
paths	array[paths]	
ports	array[ports]	
raw_capacity	integer	Raw capacity of drives in shelf in 4k blocks
serial_number	string	
state	string	
temperature_sensors	array[temperature_sensors]	
uid	string	
vendor	vendor	
voltage_sensors	array[voltage_sensors]	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a shelf

GET `/storage/shelves/{uid}`

Introduced In: 9.6

Retrieves a specific shelf.

Related ONTAP commands

- `storage shelf show`
- `storage shelf port show`
- `storage shelf drawer show`
- `storage shelf drawer show-slot`
- `storage shelf acp show`

Learn more

- DOC /storage/shelves

Parameters

Name	Type	In	Required	Description
uid	string	path	True	Shelf UID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
acps	array[acps]	Alternate Control Paths to ACP processors/functions in shelf modules and expanders
bays	array[bays]	
connection_type	string	
current_sensors	array[current_sensors]	
disk_count	integer	
drawers	array[drawers]	
errors	array[errors]	
fans	array[fans]	
frus	array[frus]	
id	string	
internal	boolean	
local	boolean	
location_led	string	
manufacturer	manufacturer	
model	string	
module_type	string	
name	string	
paths	array[paths]	
ports	array[ports]	
raw_capacity	integer	Raw capacity of drives in shelf in 4k blocks
serial_number	string	
state	string	
temperature_sensors	array[temperature_sensors]	
uid	string	
vendor	vendor	
voltage_sensors	array[voltage_sensors]	

Example response


```
{
  "acps": [
    {
      "address": "192.168.1.104",
      "channel": "out_of_band",
      "connection_state": "full_connectivity",
      "error": {
        "reason": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "severity": "string",
        "type": "string"
      },
      "netmask": "255.255.252.0",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "port": "e0P",
      "subnet": "192.168.0.1"
    }
  ],
  "bays": [
    {
      "drawer": {
        "id": 1,
        "slot": 0
      },
      "id": 0,
      "state": "ok",
      "type": "single_disk"
    }
```

```
  ],
  "connection_type": "sas",
  "current_sensors": [
    {
      "current": 14410,
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
      "state": "ok"
    }
  ],
  "disk_count": 12,
  "drawers": [
    {
      "disk_count": 12,
      "error": "string",
      "part_number": "111-03071",
      "serial_number": "021604008263",
      "state": "ok"
    }
  ],
  "errors": [
    {
      "reason": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    }
  ],
  "fans": [
    {
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
      "rpm": 3020,
      "state": "ok"
    }
  ],
  "frus": [
    {
```

```
      "firmware_version": "0191",
      "installed": 1,
      "part_number": "111-00690+A2",
      "psu": {
        "crest_factor": 92,
        "model": "00",
        "power_drawn": 210,
        "power_rating": 1600
      },
      "serial_number": "8000166294",
      "state": "error",
      "type": "module"
    }
  ],
  "id": "1",
  "location_led": "off",
  "manufacturer": {
    "name": "NETAPP"
  },
  "model": "DS2246",
  "module_type": "iom6",
  "name": "1.1",
  "paths": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "2a",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "ports": [
    {
      "cable": {
        "identifier": "500a0980000b6c3f-50000d1703544b80",
        "length": "2m",
```

```
        "part_number": "112-00431+A0",
        "serial_number": "616930439"
      },
      "designator": "square",
      "id": 0,
      "mac_address": "string",
      "module_id": "a",
      "remote": {
        "chassis": "string",
        "device": "string",
        "mac_address": "string",
        "phy": "12",
        "port": "string",
        "wwn": "50000D1703544B80"
      },
      "speed": 100,
      "state": "connected",
      "wwn": "500A0980000B6C3F"
    }
  ],
  "raw_capacity": 5157308772,
  "serial_number": "SHFMS1514000895",
  "state": "ok",
  "temperature_sensors": [
    {
      "ambient": "",
      "id": 1,
      "installed": 1,
      "location": "temp sensor on midplane left",
      "state": "ok",
      "temperature": 32,
      "threshold": {
        "high": {
          "critical": 60,
          "warning": 55
        },
        "low": {
          "critical": 0,
          "warning": 5
        }
      }
    }
  ],
  "uid": "7777841915827391056",
  "vendor": {
    "manufacturer": "XYZ",
```

```
    "name": "XYZ",
    "part_number": "A92831142733",
    "product": "LS2246",
    "serial_number": "891234572210221"
  },
  "voltage_sensors": [
    {
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
      "state": "ok",
      "voltage": 12.18
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Error object is populated when connection_state becomes non-optimal

Name	Type	Description
reason	error	
severity	string	
type	string	

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

acps

Name	Type	Description
address	string	
channel	string	
connection_state	string	
enabled	boolean	
error	error	Error object is populated when connection_state becomes non-optimal
netmask	string	
node	node	
port	string	
subnet	string	

drawer

Name	Type	Description
id	integer	The drawer containing this bay
slot	integer	The drawer slot for this bay

bays

Name	Type	Description
drawer	drawer	
has_disk	boolean	
id	integer	
state	string	
type	string	

current_sensors

Name	Type	Description
current	integer	Current, in milliamps
id	integer	
installed	boolean	
location	string	

Name	Type	Description
state	string	

drawers

Name	Type	Description
closed	boolean	
disk_count	integer	
error	string	
id	integer	
part_number	string	
serial_number	string	
state	string	

errors

Name	Type	Description
reason	error	

fans

Name	Type	Description
id	integer	
installed	boolean	
location	string	
rpm	integer	
state	string	

psu

Name	Type	Description
crest_factor	integer	The ratio of the peak voltage to the root-mean-square voltage
model	string	
power_drawn	integer	Power drawn, in watts
power_rating	integer	Power rating, in watts

frus

Name	Type	Description
firmware_version	string	
id	integer	
installed	boolean	
part_number	string	
psu	psu	
serial_number	string	
state	string	
type	string	

manufacturer

Name	Type	Description
name	string	

paths

Storage port

Name	Type	Description
_links	_links	
name	string	
node	node	

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	

remote

Name	Type	Description
chassis	string	
device	string	
mac_address	string	
phy	string	
port	string	

Name	Type	Description
wwn	string	

ports

Name	Type	Description
cable	cable	
designator	string	
id	integer	
internal	boolean	
mac_address	string	
module_id	string	
remote	remote	
speed	integer	
state	string	
wwn	string	

high

Name	Type	Description
critical	integer	High critical threshold, in degrees Celsius
warning	integer	High warning threshold, in degrees Celsius

low

Name	Type	Description
critical	integer	Low critical threshold, in degrees Celsius
warning	integer	Low warning threshold, in degrees Celsius

threshold

Name	Type	Description
high	high	
low	low	

temperature_sensors

Name	Type	Description
ambient	boolean	Sensor that measures the ambient temperature
id	integer	
installed	boolean	
location	string	
state	string	
temperature	integer	Temperature, in degrees Celsius
threshold	threshold	

vendor

Name	Type	Description
manufacturer	string	Support for this field will be removed in a future release. Please use vendor.name for this field.
name	string	
part_number	string	Part number
product	string	Product name
serial_number	string	Serial number

voltage_sensors

Name	Type	Description
id	integer	
installed	boolean	
location	string	
state	string	
voltage	number	Voltage, in volts

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a shelf location LED

PATCH `/storage/shelves/{uid}`

Introduced In: 9.10

Updates a shelf location LED.

Related ONTAP commands

- `storage shelf location-led modify`

Learn more

- DOC /storage/shelves

Parameters

Name	Type	In	Required	Description
uid	string	path	True	Shelf UID

Request Body

Name	Type	Description
acps	array[acps]	Alternate Control Paths to ACP processors/functions in shelf modules and expanders
connection_type	string	
current_sensors	array[current_sensors]	
disk_count	integer	
drawers	array[drawers]	
fans	array[fans]	
frus	array[frus]	

Name	Type	Description
id	string	
internal	boolean	
local	boolean	
location_led	string	
manufacturer	manufacturer	
model	string	
module_type	string	
name	string	
paths	array[paths]	
raw_capacity	integer	Raw capacity of drives in shelf in 4k blocks
serial_number	string	
state	string	
temperature_sensors	array[temperature_sensors]	
uid	string	
vendor	vendor	
voltage_sensors	array[voltage_sensors]	

Example request


```
{
  "acps": [
    {
      "address": "192.168.1.104",
      "channel": "out_of_band",
      "connection_state": "full_connectivity",
      "error": {
        "severity": "string",
        "type": "string"
      },
      "netmask": "255.255.252.0",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "port": "e0P",
      "subnet": "192.168.0.1"
    }
  ],
  "connection_type": "sas",
  "current_sensors": [
    {
      "current": 14410,
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
      "state": "ok"
    }
  ],
  "disk_count": 12,
  "drawers": [
    {
      "disk_count": 12,
      "error": "string",
      "part_number": "111-03071",
      "serial_number": "021604008263",
      "state": "ok"
    }
  ],
  "fans": [
    {
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
```

```
      "rpm": 3020,
      "state": "ok"
    }
  ],
  "frus": [
    {
      "firmware_version": "0191",
      "installed": 1,
      "part_number": "111-00690+A2",
      "psu": {
        "crest_factor": 92,
        "model": "00",
        "power_drawn": 210,
        "power_rating": 1600
      },
      "serial_number": "8000166294",
      "state": "error",
      "type": "module"
    }
  ],
  "id": "1",
  "location_led": "off",
  "manufacturer": {
    "name": "NETAPP"
  },
  "model": "DS2246",
  "module_type": "iom6",
  "name": "1.1",
  "paths": [
    {
      "name": "2a",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "raw_capacity": 5157308772,
  "serial_number": "SHFMS1514000895",
  "state": "ok",
  "temperature_sensors": [
    {
      "ambient": "",
      "id": 1,
      "installed": 1,
      "location": "temp sensor on midplane left",
```

```
      "state": "ok",
      "temperature": 32,
      "threshold": {
        "high": {
          "critical": 60,
          "warning": 55
        },
        "low": {
          "critical": 0,
          "warning": 5
        }
      }
    }
  ],
  "uid": "7777841915827391056",
  "vendor": {
    "manufacturer": "XYZ",
    "name": "XYZ",
    "part_number": "A92831142733",
    "product": "LS2246",
    "serial_number": "891234572210221"
  },
  "voltage_sensors": [
    {
      "id": 1,
      "installed": 1,
      "location": "rear of the shelf on the lower left power supply",
      "state": "ok",
      "voltage": 12.18
    }
  ]
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
17825872	Shelf locate request failed because shelf "<name>\" was not found.</name>
17825873	Shelf locate request failed because shelf "<name>\" does not support this command.</name>
17825874	Shelf locate request failed for shelf "<name>\" with an unknown error.</name>
17825875	Shelf locate request failed for shelf "<name>\" because shelf modules are unreachable.</name>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

error

Error object is populated when connection_state becomes non-optimal

Name	Type	Description
severity	string	
type	string	

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

acps

Name	Type	Description
address	string	

Name	Type	Description
channel	string	
connection_state	string	
enabled	boolean	
error	error	Error object is populated when connection_state becomes non-optimal
netmask	string	
node	node	
port	string	
subnet	string	

drawer

Name	Type	Description
id	integer	The drawer containing this bay
slot	integer	The drawer slot for this bay

bays

Name	Type	Description
drawer	drawer	
has_disk	boolean	
id	integer	
state	string	
type	string	

current_sensors

Name	Type	Description
current	integer	Current, in milliamps
id	integer	
installed	boolean	
location	string	
state	string	

drawers

Name	Type	Description
closed	boolean	
disk_count	integer	
error	string	
id	integer	
part_number	string	
serial_number	string	
state	string	

errors

fans

Name	Type	Description
id	integer	
installed	boolean	
location	string	
rpm	integer	
state	string	

psu

Name	Type	Description
crest_factor	integer	The ratio of the peak voltage to the root-mean-square voltage
model	string	
power_drawn	integer	Power drawn, in watts
power_rating	integer	Power rating, in watts

frus

Name	Type	Description
firmware_version	string	
id	integer	
installed	boolean	
part_number	string	
psu	psu	

Name	Type	Description
serial_number	string	
state	string	
type	string	

manufacturer

Name	Type	Description
name	string	

paths

Storage port

Name	Type	Description
name	string	
node	node	

cable

Name	Type	Description
identifier	string	
length	string	
part_number	string	
serial_number	string	

remote

Name	Type	Description
chassis	string	
device	string	
mac_address	string	
phy	string	
port	string	
wwn	string	

ports

Name	Type	Description
cable	cable	
designator	string	

Name	Type	Description
id	integer	
internal	boolean	
mac_address	string	
module_id	string	
remote	remote	
speed	integer	
state	string	
wwn	string	

high

Name	Type	Description
critical	integer	High critical threshold, in degrees Celsius
warning	integer	High warning threshold, in degrees Celsius

low

Name	Type	Description
critical	integer	Low critical threshold, in degrees Celsius
warning	integer	Low warning threshold, in degrees Celsius

threshold

Name	Type	Description
high	high	
low	low	

temperature_sensors

Name	Type	Description
ambient	boolean	Sensor that measures the ambient temperature
id	integer	

Name	Type	Description
installed	boolean	
location	string	
state	string	
temperature	integer	Temperature, in degrees Celsius
threshold	threshold	

vendor

Name	Type	Description
manufacturer	string	Support for this field will be removed in a future release. Please use vendor.name for this field.
name	string	
part_number	string	Part number
product	string	Product name
serial_number	string	Serial number

voltage_sensors

Name	Type	Description
id	integer	
installed	boolean	
location	string	
state	string	
voltage	number	Voltage, in volts

shelf

Name	Type	Description
acps	array[acps]	Alternate Control Paths to ACP processors/functions in shelf modules and expanders
connection_type	string	
current_sensors	array[current_sensors]	

Name	Type	Description
disk_count	integer	
drawers	array[drawers]	
fans	array[fans]	
frus	array[frus]	
id	string	
internal	boolean	
local	boolean	
location_led	string	
manufacturer	manufacturer	
model	string	
module_type	string	
name	string	
paths	array[paths]	
raw_capacity	integer	Raw capacity of drives in shelf in 4k blocks
serial_number	string	
state	string	
temperature_sensors	array[temperature_sensors]	
uid	string	
vendor	vendor	
voltage_sensors	array[voltage_sensors]	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage snapshot policies

Storage snapshot-policies endpoint overview

Overview

In ONTAP, scheduled snapshot creation works based on snapshot policies.
ONTAP provides three cluster-wide snapshot policies: "default", "default-1weekly" and "none".
A snapshot policy can have more than one schedule associated with it.
A snapshot policy can be linked to a storage object and based on the schedule in the policy, snapshots will be created on the object at that interval.
Each schedule in a snapshot policy has a snapshot name prefix attached to it. Every snapshot created using this policy will have this prefix in its name.
There is also a retention count associated with every schedule. This count indicates the maximum number of snapshots that can exist for a given schedule. Once the snapshot count reaches the retention count, on the next create operation, the oldest snapshot is deleted.
A retention period can be associated with every schedule. During snapshot creation, this period is set as SnapLock expiry time on snapshot locking enabled volumes.

Snapshot policy APIs

The following APIs are used to perform operations related to snapshot policy information:

– POST /api/storage/snapshot-policies

– GET /api/storage/snapshot-policies

– GET /api/storage/snapshot-policies/{uuid}

– PATCH /api/storage/snapshot-policies/{uuid}

– DELETE /api/storage/snapshot-policies/{uuid}

Examples

Creating a snapshot policy

The POST operation is used to create a snapshot policy with the specified attributes.

```
# The API:
/api/storage/snapshot-policies

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/snapshot-policies" -H
"accept: application/hal+json" -d '{"name": "new_policy", "enabled":
"true", "comment": "policy comment", "copies": [{ "schedule": { "name":
"5min" }, "count": "5", "prefix": "xyz" , "retention_period": "PT20M" }],
"svm": { "name": "vs0"}}'

# The response:
HTTP/1.1 201 Created
Date: Tue, 12 Mar 2019 21:20:24 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/storage/snapshot-policies/a69d8173-450c-11e9-aa44-
005056bbc848
Content-Length: 369
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "uuid": "a69d8173-450c-11e9-aa44-005056bbc848",
    "svm": {
      "name": "vs0"
    },
    "name": "new_policy",
    "comment": "This is a 5min schedule policy",
    "enabled": true,
    "copies": [
      {
        "count": 5,
        "snapmirror_label": "-",
        "retention_period": "PT20M",
        "schedule": {
          "name": "5min"
        }
      }
    ]
  }
]
}
```

Retrieving snapshot policy attributes

The GET operation is used to retrieve snapshot policy attributes.

```
# The API:
/api/storage/snapshot-policies

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/snapshot-policies/" -H "accept:
application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:17:17 GMT
Server: libzapid-http
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 686
Content-Type: application/json
{
"records": [
  {
    "uuid": "0fa7a554-348d-11e9-b55e-005056bbf1c8",
    "name": "spsv0",
    "_links": {
      "self": {
        "href": "/api/storage/snapshot-policies/0fa7a554-348d-11e9-b55e-
005056bbf1c8"
      }
    }
  },
  {
    "uuid": "3c112527-2fe8-11e9-b55e-005056bbf1c8",
    "name": "default",
    "_links": {
      "self": {
        "href": "/api/storage/snapshot-policies/3c112527-2fe8-11e9-b55e-
005056bbf1c8"
      }
    }
  },
  {
    "uuid": "3c1c1656-2fe8-11e9-b55e-005056bbf1c8",
    "name": "default-1weekly",
    "_links": {
      "self": {
```

```
        "href": "/api/storage/snapshot-policies/3c1c1656-2fe8-11e9-b55e-
005056bbf1c8"
      }
    }
  },
  {
    "uuid": "3c228b82-2fe8-11e9-b55e-005056bbf1c8",
    "name": "none",
    "_links": {
      "self": {
        "href": "/api/storage/snapshot-policies/3c228b82-2fe8-11e9-b55e-
005056bbf1c8"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/storage/snapshot-policies/"
  }
}
}
```


Retrieving the attributes of a specific snapshot policy

The GET operation is used to retrieve the attributes of a specific snapshot policy.

```
# The API:
/api/storage/snapshot-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/snapshot-policies/3c112527-
2fe8-11e9-b55e-005056bbf1c8" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:24:48 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 381
Content-Type: application/json
{
"uuid": "3c112527-2fe8-11e9-b55e-005056bbf1c8",
"name": "default",
```

```
"comment": "Default policy with hourly, daily & weekly schedules.",
"enabled": true,
"scope": "cluster",
"copies": [
  {
    "count": 6,
    "prefix": "hourly",
    "schedule": {
      "name": "hourly"
    }
  },
  {
    "count": 2,
    "prefix": "daily",
    "schedule": {
      "name": "daily"
    }
  },
  {
    "count": 2,
    "prefix": "weekly",
    "schedule": {
      "name": "weekly"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/storage/snapshot-policies/3c112527-2fe8-11e9-b55e-
005056bbf1c8"
  }
}
}
```


Updating a snapshot policy

The PATCH operation is used to update the specific attributes of a snapshot policy.

```
# The API:
/api/storage/snapshot-policies/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/snapshot-policies/ae9e65c4-
4506-11e9-aa44-005056bbc848" -d '{"enabled": "false" }' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:27:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Deleting a snapshot policy

The DELETE operation is used to delete a snapshot policy.

```
# The API:
/api/storage/snapshot-policies/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/snapshot-policies/ae9e65c4-
4506-11e9-aa44-005056bbc848" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:19:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Retrieve snapshot policies

GET `/storage/snapshot-policies`

Introduced In: 9.6

Retrieves a collection of snapshot policies.

Related ONTAP commands

- `snapshot policy show`

Learn more

- DOC /storage/snapshot-policies

Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
copies.prefix	string	query	False	Filter by copies.prefix
copies.snapmirror_label	string	query	False	Filter by copies.snapmirror_label
copies.schedule.uuid	string	query	False	Filter by copies.schedule.uuid • Introduced in: 9.14
copies.schedule.name	string	query	False	Filter by copies.schedule.name
copies.count	integer	query	False	Filter by copies.count
copies.retention_period	string	query	False	Filter by copies.retention_period • Introduced in: 9.12
scope	string	query	False	Filter by scope
comment	string	query	False	Filter by comment
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid

Name	Type	In	Required	Description
enabled	boolean	query	False	Filter by enabled
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snapshot_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "copies": [
        {
          "prefix": "string",
          "retention_period": "string",
          "schedule": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "weekly",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "snapmirror_label": "string"
        }
      ],
      "enabled": 1,
      "name": "default",
      "scope": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
```

```
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

copies

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.

Name	Type	Description
retention_period	string	The retention period of snapshots for this schedule. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported.</num></num></num></num></num>
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapshot_policy

The snapshot policy object is associated with a read-write volume used to create and delete snapshots at regular intervals.

Name	Type	Description
_links	_links	
comment	string	A comment associated with the snapshot policy.
copies	array[copies]	
enabled	boolean	Is the snapshot policy enabled?
name	string	Name of the snapshot policy.
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a snapshot policy

POST `/storage/snapshot-policies`

Introduced In: 9.6

Creates a snapshot policy.

Required properties

- `svm.uuid` or `svm.name` - Specifies an SVM for policy creation. If not specified, the snapshot policy will be created on the cluster admin SVM.
- `name` - Name for the snapshot policy.
- `copies.schedule` - Schedule name at which snapshots are captured on the volume.
- `copies.count` - Number of snapshots to maintain for this schedule.

Recommended optional properties

- `copies.prefix` - Prefix to use when creating snapshots at regular intervals.
- `copies.snapmirror_label` - Label for SnapMirror operations.
- `copies.retention_period` - Retention period for snapshot locking enabled volumes.The duration must be specified in ISO format or "infinite".

Default property values

If not specified in POST, the following default property values are assigned:

- `svm.uuid` or `svm.name` - If not specified, the snapshot policy will be created on the cluster admin SVM.
- `enabled` - *true*
- `copies.prefix` - Value of `schedule.name`

Related ONTAP commands

- `snapshot policy create`

Learn more

- DOC /storage/snapshot-policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A comment associated with the snapshot policy.
copies	array[copies]	
enabled	boolean	Is the snapshot policy enabled?
name	string	Name of the snapshot policy.
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "comment": "string",
  "copies": [
    {
      "prefix": "string",
      "retention_period": "string",
      "schedule": {
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snapmirror_label": "string"
    }
  ],
  "enabled": 1,
  "name": "default",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1638407	When adding schedule to a snapshot policy, the count for that schedule must be specified.
1638408	When adding schedule to a snapshot policy, the schedule name must be specified.
1638413	Schedule not found.
1638417	Specified policy name is invalid.
1638451	This operation would result in total snapshot count for the policy to exceed maximum supported count.
1638506	Schedule already has a prefix. Cannot associate another prefix to the same schedule.
1638508	Another schedule has the same prefix within this policy.
1638526	This operation is not supported on a node Vserver.
1638527	Policy name already exists.
1638528	This operation is not supported in a mixed-version cluster.
1638531	This operation is not supported because specified policy is owned by the cluster admin.
2621706	The specified SVM UUID and SVM name refer to different SVMs.
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

copies

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.

Name	Type	Description
retention_period	string	The retention period of snapshots for this schedule. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported.</num></num></num></num></num>
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapshot_policy

The snapshot policy object is associated with a read-write volume used to create and delete snapshots at regular intervals.

Name	Type	Description
comment	string	A comment associated with the snapshot policy.
copies	array[copies]	
enabled	boolean	Is the snapshot policy enabled?
name	string	Name of the snapshot policy.
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a snapshot policy

DELETE `/storage/snapshot-policies/{uuid}`

Introduced In: 9.6

Deletes a snapshot policy

Related ONTAP commands

- `snapshot policy delete`

Learn more

- DOC /storage/snapshot-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Snapshot policy UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
1638415	Cannot delete policy. Reason: Policy is in use by at least one volume.
1638416	Cannot delete policy. Reason: Cannot verify whether policy is in use.
1638430	Cannot delete policy. Reason: Policy is in use by at least one Vserver.
1638431	Cannot delete built-in policy.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve snapshot policy details

GET `/storage/snapshot-policies/{uuid}`

Introduced In: 9.6

Retrieves details of a specific snapshot policy.

Related ONTAP commands

- `snapshot policy show`

Learn more

- DOC /storage/snapshot-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Snapshot policy UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A comment associated with the snapshot policy.
copies	array[copies]	
enabled	boolean	Is the snapshot policy enabled?
name	string	Name of the snapshot policy.
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "copies": [
    {
      "prefix": "string",
      "retention_period": "string",
      "schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snapmirror_label": "string"
    }
  ],
  "enabled": 1,
  "name": "default",
  "scope": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

copies

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.

Name	Type	Description
retention_period	string	The retention period of snapshots for this schedule. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported.</num></num></num></num></num>
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a snapshot policy

PATCH `/storage/snapshot-policies/{uuid}`

Introduced In: 9.6

Updates a snapshot policy

Related ONTAP commands

- `snapshot policy modify`
- `snapshot policy modify-schedule`
- `snapshot policy add-schedule`

Learn more

- DOC /storage/snapshot-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Snapshot policy UUID

Request Body

Name	Type	Description
comment	string	A comment associated with the snapshot policy.
enabled	boolean	Is the snapshot policy enabled?
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
uuid	string	

Example request

```
{
  "comment": "string",
  "enabled": 1,
  "scope": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
1638414	Cannot enable policy. Reason: Schedule not found.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

copies

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.

Name	Type	Description
retention_period	string	The retention period of snapshots for this schedule. The retention period value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported.</num></num></num></num></num>
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snapshot_policy

The snapshot policy object is associated with a read-write volume used to create and delete snapshots at regular intervals.

Name	Type	Description
comment	string	A comment associated with the snapshot policy.
enabled	boolean	Is the snapshot policy enabled?
scope	string	Set to "svm" when the request is on a data SVM, otherwise set to "cluster".
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage snapshot policies and schedules

Storage snapshot-policies snapshot_policy.uuid schedules endpoint overview

Overview

In ONTAP, scheduled snapshot creation works based on the schedules associated with snapshot policies. ONTAP provides six cluster-wide schedules: "5min", "8hour", "hourly", "daily", "weekly" and "monthly".
A snapshot policy is created using at least one of these schedules and up to 5 schedules can be associated with a snapshot policy.
A snapshot policy can be linked to a storage object and based on the schedule in the policy, snapshots are created on the object at that interval.
Each schedule in a snapshot policy has a snapshot name prefix attached to it. Every snapshot created using this policy has this prefix in its name.

There is also a retention count associated with every schedule. This count indicates the maximum number of snapshots that can exist for a given schedule.
Once the snapshot count reaches the retention count, on the next create operation, the oldest snapshot is deleted.
A retention period can be associated with every schedule. During snapshot creation, this period is set as SnapLock expiry time on snapshot locking enabled volumes.

A schedule can be added, modified or deleted from a snapshot policy.

Snapshot policy schedule APIs

The following APIs are used to perform operations related to snapshot policy schedules:

– POST /api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/

– GET /api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/

– GET /api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

– PATCH /api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

– DELETE /api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

Examples

Adding schedule to a snapshot policy

The POST operation is used to create a schedule for a snapshot policy with the specified attributes.

```
# The API:
/api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/snapshot-policies/32a0841a-
818e-11e9-b4f4-005056bbab9c/schedules" -H "accept: application/hal+json"
-d '{"schedule.uuid": "7c985d80-818a-11e9-b4f4-005056bbab9c", "count":
"5", "prefix": "new_hourly" }'

# The response:
HTTP/1.1 201 Created
Date: Wed, 29 May 2019 22:41:33 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/storage/snapshot-policies/32a0841a-818e-11e9-b4f4-
005056bbab9c/schedules
Content-Length: 271
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "snapshot_policy": {
      "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
    },
    "schedule": {
      "uuid": "7c985d80-818a-11e9-b4f4-005056bbab9c"
    },
    "count": 5,
    "prefix": "new_monthly"
  }
]
}
```

Retrieving snapshot policy schedules

The GET operation is used to retrieve snapshot policy schedules.

```
# The API:
/api/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/snapshot-policies/32a0841a-
818e-11e9-b4f4-005056bbab9c/schedules" -H "accept: application/hal+json"
```

```
# The response:
HTTP/1.1 200 OK
Date: Wed, 29 May 2019 22:49:58 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 898
Content-Type: application/json
{
"records": [
  {
    "snapshot_policy": {
      "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
    },
    "schedule": {
      "uuid": "63d017dc-818a-11e9-b4f4-005056bbab9c",
      "name": "5min"
    }
  },
  {
    "snapshot_policy": {
      "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
    },
    "schedule": {
      "uuid": "64a5c5da-818a-11e9-b4f4-005056bbab9c",
      "name": "8hour"
    }
  },
  {
    "snapshot_policy": {
      "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
    },
    "schedule": {
      "uuid": "63e21a3e-818a-11e9-b4f4-005056bbab9c",
      "name": "daily"
    }
  },
  {
    "snapshot_policy": {
      "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
    },
    "schedule": {
      "uuid": "7c985d80-818a-11e9-b4f4-005056bbab9c",
      "name": "monthly"
    }
```

```
  }
],
"num_records": 4
}
```

Retrieving the attributes of a specific snapshot policy schedule

The GET operation is used to retrieve the attributes of a specific snapshot policy schedule.

```
# The API:
/api/storage/snapshot-
policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/snapshot-policies/32a0841a-
818e-11e9-b4f4-005056bbab9c/schedules/7c985d80-818a-11e9-b4f4-
005056bbab9c" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 29 May 2019 22:54:06 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 238
Content-Type: application/json
{
"snapshot_policy": {
  "uuid": "32a0841a-818e-11e9-b4f4-005056bbab9c"
},
"schedule": {
  "uuid": "7c985d80-818a-11e9-b4f4-005056bbab9c",
  "name": "monthly"
},
"count": 5,
"prefix": "new_monthly",
"snapmirror_label": "-",
"retention_period": "PT20M"
}
```

Updating a snapshot policy schedule

The PATCH operation is used to update the specific attributes of a snapshot policy.

```
# The API:
/api/storage/snapshot-
policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/snapshot-policies/32a0841a-
818e-11e9-b4f4-005056bbab9c/schedules/7c985d80-818a-11e9-b4f4-
005056bbab9c" -d '{"count": "10" }' -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 29 May 2019 23:08:00 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Deleting a snapshot policy

The DELETE operation is used to delete a snapshot policy.

```
# The API:
/api/storage/snapshot-
policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/snapshot-policies/32a0841a-
818e-11e9-b4f4-005056bbab9c/schedules/7c985d80-818a-11e9-b4f4-
005056bbab9c" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 29 May 2019 23:12:32 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Retrieve snapshot policy schedules

GET `/storage/snapshot-policies/{snapshot_policy.uuid}/schedules`

Introduced In: 9.8

Retrieves a collection of snapshot policy schedules.

Related ONTAP commands

- `snapshot policy show`

Learn more

- DOC /storage/snapshot-policies/{snapshot_policy.uuid}/schedules

Parameters

Name	Type	In	Required	Description
snapshot_policy.uuid	string	path	True	Snapshot policy UUID
prefix	string	query	False	Filter by prefix
snapmirror_label	string	query	False	Filter by snapmirror_label
count	integer	query	False	Filter by count
schedule.uuid	string	query	False	Filter by schedule.uuid
schedule.name	string	query	False	Filter by schedule.name
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name
retention_period	string	query	False	Filter by retention_period • Introduced in: 9.12
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[snapshot_policy_schedule]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "prefix": "string",
      "retention_period": "string",
      "schedule": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "weekly",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "snapmirror_label": "string",
      "snapshot_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "default",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

snapshot_policy_schedule

The snapshot policy schedule object is associated with a snapshot policy and it defines the interval at which snapshots are created and deleted.

Name	Type	Description
_links	_links	

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Add a schedule to a snapshot policy

POST `/storage/snapshot-policies/{snapshot_policy.uuid}/schedules`

Introduced In: 9.8

Adds a schedule to a snapshot policy.

Required properties

- `schedule.uuid` or `schedule.name` - Schedule at which snapshots are captured on the volume.
- `count` - Number of snapshots to maintain for this schedule.

Recommended optional properties

- `prefix` - Prefix to use when creating snapshots at regular intervals.

Default property values

If not specified in POST, the following default property values are assigned:

- `prefix` - Value of `schedule.name`

Related ONTAP commands

- `snapshot policy add-schedule`

Learn more

- DOC /storage/snapshot-policies/{snapshot_policy.uuid}/schedules

Parameters

Name	Type	In	Required	Description
snapshot_policy.uuid	string	path	True	Snapshot policy UUID
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	

Name	Type	Description
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

Example request

```
{
  "prefix": "string",
  "retention_period": "string",
  "schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "snapmirror_label": "string",
  "snapshot_policy": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1638407	When adding schedule to a snapshot policy, the count for that schedule must be specified.

Error Code	Description
1638410	Specified schedule already exists in snapshot policy.
1638413	Schedule not found.
1638451	This operation would result in total snapshot count for the policy to exceed maximum supported count.
1638508	Another schedule has the same prefix within this policy.
1638510	Duplicate prefix.
1638528	This operation is not supported in a mixed-version cluster.
1638531	This operation is not supported because specified policy is owned by the cluster admin.
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

snapshot_policy_schedule

The snapshot policy schedule object is associated with a snapshot policy and it defines the interval at which snapshots are created and deleted.

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a schedule from a snapshot policy

DELETE `/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}`

Introduced In: 9.8

Deletes a schedule from a snapshot policy

Related ONTAP commands

- `snapshot policy remove-schedule`

Learn more

- DOC /storage/snapshot-policies/{snapshot_policy.uuid}/schedules

Parameters

Name	Type	In	Required	Description
snapshot_policy.uuid	string	path	True	Snapshot policy UUID
schedule.uuid	string	path	True	Snapshot policy schedule UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
1638411	At least minimum number of schedule must be specified for the policy.
1638412	Schedule does not exist in snapshot policy.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve snapshot policy schedule details

GET `/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}`

Introduced In: 9.8

Retrieves details of a specific snapshot policy schedule.

Related ONTAP commands

- `snapshot policy show`

Learn more

- DOC /storage/snapshot-policies/{snapshot_policy.uuid}/schedules

Parameters

Name	Type	In	Required	Description
snapshot_policy.uuid	string	path	True	Snapshot policy UUID
schedule.uuid	string	path	True	Snapshot policy schedule ID

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
count	integer	The number of snapshots to maintain for this schedule.
prefix	string	The prefix to use while creating snapshots at regular intervals.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "prefix": "string",
  "retention_period": "string",
  "schedule": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "snapmirror_label": "string",
  "snapshot_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
_links	_links	
name	string	Job schedule name
uuid	string	Job schedule UUID

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Update a snapshot policy schedule

PATCH `/storage/snapshot-policies/{snapshot_policy.uuid}/schedules/{schedule.uuid}`

Introduced In: 9.8

Updates a snapshot policy schedule

Related ONTAP commands

- `snapshot policy modify-schedule`

Learn more

- DOC /storage/snapshot-policies/{snapshot_policy.uuid}/schedules

Parameters

Name	Type	In	Required	Description
snapshot_policy.uuid	string	path	True	Snapshot policy UUID
schedule.uuid	string	path	True	Snapshot policy schedule UUID

Request Body

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

Example request

```
{
  "retention_period": "string",
  "schedule": {
    "name": "weekly",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "snapmirror_label": "string",
  "snapshot_policy": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
1638451	This operation would result in total snapshot count for the policy to exceed maximum supported count.
918253	Incorrect format for the retention period, duration must be in the ISO-8601 format.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Job schedule name
uuid	string	Job schedule UUID

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

snapshot_policy_schedule

The snapshot policy schedule object is associated with a snapshot policy and it defines the interval at which snapshots are created and deleted.

Name	Type	Description
count	integer	The number of snapshots to maintain for this schedule.
retention_period	string	The retention period of snapshots for this schedule.
schedule	schedule	
snapmirror_label	string	Label for SnapMirror operations
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage switches

Storage switches endpoint overview

Retrieving storage switch information

The storage switch GET API retrieves all of the switches in the cluster.

Examples

1) Retrieves a list of storage switches from the cluster

The following example shows the response with a list of storage switches in the cluster:

```
# The API:
/api/storage/switches

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/switches" -H "accept:
application/hal+json"

# The response:
{
"records": [
```

```
    {
      "name": "Brocade_10.226.57.206",
      "_links": {
        "self": {
          "href": "/api/storage/switches/Brocade_10.226.57.206"
        }
      }
    },
    {
      "name": "Brocade_10.226.57.207",
      "_links": {
        "self": {
          "href": "/api/storage/switches/Brocade_10.226.57.207"
        }
      }
    },
    {
      "name": "Brocade_10.226.57.208",
      "_links": {
        "self": {
          "href": "/api/storage/switches/Brocade_10.226.57.208"
        }
      }
    },
    {
      "name": "Brocade_10.226.57.209",
      "_links": {
        "self": {
          "href": "/api/storage/switches/Brocade_10.226.57.209"
        }
      }
    }
  ],
  "num_records": 4,
  "_links": {
    "self": {
      "href": "/api/storage/switches/"
    }
  }
  }
```


2) Retrieves a specific storage switch from the cluster

The following example shows the response of the requested storage switch. If there is no storage switch with the requested name, an error is returned.

```
# The API:
/api/storage/switches/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/switches/Brocade_10.226.57.206"
-H "accept: application/hal+json"

# The response:
{
"name": "Brocade_10.226.57.206",
"domain_id": 5,
"switch_fabric_name": "100050eb1a238892",
"fw_version": "v7.2.1c1",
"ip_address": "10.226.57.206",
"is_director_class": false,
"local": false,
"monitoring_enabled": true,
"model": "Brocade6510",
"role": "subordinate",
"state": "ok",
"symbolic_name": "rtp-fc01-41kk11",
"vendor": "brocade",
"wwn": "100050eb1a1ef7d7",
"power_supply_units": [
  {
    "name": "Power Supply #1",
    "state": "ok"
  },
  {
    "name": "Power Supply #2",
    "state": "ok"
  }
],
"temperature_sensors": [
  {
    "name": "SLOT #0: TEMP #1",
    "reading": 52,
    "state": "ok"
  }
],
"ports": [
  {
```

```
    "name": "FC port 0/0",
    "mode": "f_port",
    "wwn": "200050eb1a1ef7d7",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  },
  {
    "name": "FC port 0/1",
    "mode": "f_port",
    "wwn": "200050eb1a1ef2d7",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  },
  {
    "name": "FC port 0/2",
    "mode": "f_port",
    "wwn": "200050eb1a1ef7d0",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  },
  {
    "name": "FC port 0/3",
    "mode": "f_port",
    "wwn": "200050eb1a1ef7d7",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
```

```
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  },
  {
    "name": "FC port 0/4",
    "mode": "f_port",
    "wwn": "200050eb1a1ef2d7",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  },
  {
    "name": "FC port 0/5",
    "mode": "f_port",
    "wwn": "200050eb1a1ef7d0",
    "enabled": true,
    "state": "online",
    "speed": 16,
    "sfp": {
      "type": "small_form_factor",
      "transmitter_type": "short_wave_laser",
      "serial_number": "HAA2140310058E5"
    }
  }
],
"connections": [
  {
    "source_port": {
      "name": "FC port 0/0",
      "wwn": "200050eb1a236efd",
      "mode": "f_port"
    },
    "peer_port": {
      "wwn": "2100000e1e30ac5f",
      "connection": "sti8020mcc-htp-006:fcvi_device_1",
      "type": "fcvi_adapter",
      "unique_id": "38993dc0-4ea1-11eb-9331-00a0985bd455"
    }
  },
```

```
    {
      "source_port": {
        "name": "FC port 0/1",
        "wwn": "200150eb1a236efd",
        "mode": "f_port"
      },
      "peer_port": {
        "wwn": "21000024ff72c0c9",
        "connection": "sti8020mcc-htp-006:2b",
        "type": "fcp_adapter",
        "unique_id": "38993dc0-4ea1-11eb-9331-00a0985bd455"
      }
    },
    {
      "source_port": {
        "name": "FC port 0/2",
        "wwn": "200250eb1a236efd",
        "mode": "f_port"
      },
      "peer_port": {
        "wwn": "21000024ff72c0cb",
        "connection": "sti8020mcc-htp-006:2d",
        "type": "fcp_adapter",
        "unique_id": "38993dc0-4ea1-11eb-9331-00a0985bd455"
      }
    }
  ],
  "fans": [
    {
      "name": "FAN #1",
      "speed": 7336,
      "state": "ok"
    },
    {
      "name": "FAN #2",
      "speed": 7336,
      "state": "ok"
    }
  ],
  "paths": [
       {
         "adapter": {
           "name": "2a",
           "wwn": "21000024ff6c4bc0",
           "type": "fcp_initiator"
         },
```

```
        "port": {
          "name": "FC port 0/4",
          "speed": 8
        },
        "node": {
          "name": "sti8020mcc-htp-005",
          "uuid": "382cb083-4416-11eb-ad1d-00a0985bd455",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/382cb083-4416-11eb-ad1d-
00a0985bd455"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/storage/ports/382cb083-4416-11eb-ad1d-
00a0985bd455/2a"
          }
        }
      },
      {
        "adapter": {
          "name": "2c",
          "wwn": "21000024ff6c4bc2",
          "type": "fcp_initiator"
        },
        "port": {
          "name": "FC port 0/5",
          "speed": 8
        },
        "node": {
          "name": "sti8020mcc-htp-005",
          "uuid": "382cb083-4416-11eb-ad1d-00a0985bd455",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/382cb083-4416-11eb-ad1d-
00a0985bd455"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/storage/ports/382cb083-4416-11eb-ad1d-
00a0985bd455/2c"
          }
```

```
        }
      },
      {
        "adapter": {
          "name": "fcvi_device_0",
          "wwn": "2100000e1e09d5d2",
          "type": "fc_vi"
        },
        "port": {
          "name": "FC port 0/3",
          "speed": 16
        },
        "node": {
          "name": "sti8020mcc-htp-005",
          "uuid": "382cb083-4416-11eb-ad1d-00a0985bd455",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/382cb083-4416-11eb-ad1d-
00a0985bd455"
            }
          }
        }
      },
      {
        "adapter": {
          "name": "2a",
          "wwn": "21000024ff72c0c8",
          "type": "fcp_initiator"
        },
        "port": {
          "name": "FC port 0/1",
          "speed": 8
        },
        "node": {
          "name": "sti8020mcc-htp-006",
          "uuid": "364fbba8-4416-11eb-8e72-00a098431045",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/364fbba8-4416-11eb-8e72-
00a098431045"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/storage/ports/364fbba8-4416-11eb-8e72-
```

```
00a098431045/2a"
          }
        }
      },
      {
        "adapter": {
          "name": "2c",
          "wwn": "21000024ff72c0ca",
          "type": "fcp_initiator"
        },
        "port": {
        "name": "FC port 0/2",
        "speed": 8
        },
        "node": {
          "name": "sti8020mcc-htp-006",
          "uuid": "364fbba8-4416-11eb-8e72-00a098431045",
          "_links": {
            "self": {
              "href": "/api/cluster/nodes/364fbba8-4416-11eb-8e72-
00a098431045"
            }
          }
        },
        "_links": {
          "self": {
            "href": "/api/storage/ports/364fbba8-4416-11eb-8e72-
00a098431045/2c"
          }
        }
      }
],
"_links": {
  "self": {
    "href": "/api/storage/switches/Brocade_10.226.57.206"
  }
}
}
```


Retrieve storage switches

GET `/storage/switches`

Introduced In: 9.9

Retrieves a collection of storage switches.

Related ONTAP commands

- `storage switch show`

Learn more

- DOC /storage/switches

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[storage_switch]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "connections": [
        {
          "peer_port": {
            "connection": "string",
            "type": "string",
            "unique_id": "string",
            "wwn": "string"
          },
          "source_port": {
            "mode": "string",
            "name": "string",
            "wwn": "string"
          }
        }
      ],
      "errors": [
        {
          "component": {
            "name": "string"
          },
          "reason": {
            "arguments": [
              {
                "code": "string",
                "message": "string"
              }
            ],
            "code": "4",
            "message": "entry doesn't exist"
          },
          "severity": "string",
          "type": "string"
```

```
        }
      ],
      "fabric_name": "string",
      "fans": [
        {
          "name": "string",
          "state": "string"
        }
      ],
      "firmware_version": "string",
      "ip_address": "string",
      "model": "string",
      "monitored_blades": [
        "integer"
      ],
      "name": "string",
      "paths": [
        {
          "adapter": {
            "name": "string",
            "type": "string",
            "wwn": "string"
          },
          "node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "node1",
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          },
          "port": {
            "name": "string"
          }
        }
      ],
      "ports": [
        {
          "mode": "string",
          "name": "string",
          "sfp": {
            "serial_number": "string",
            "transmitter_type": "string",
            "type": "string"
          },
```

```
            "state": "string",
            "wwn": "string"
          }
        ],
        "power_supply_units": [
          {
            "name": "string",
            "state": "string"
          }
        ],
        "role": "string",
        "state": "string",
        "symbolic_name": "string",
        "temperature_sensors": [
          {
            "name": "string",
            "state": "string"
          }
        ],
        "vendor": "string",
        "vsans": [
          {
            "load_balancing_types": "string",
            "name": "string",
            "state": "string"
          }
        ],
        "wwn": "string",
        "zones": [
          {
            "name": "string",
            "port": {
              "id": "string",
              "name": "string"
            },
            "wwn": "string"
          }
        ]
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

peer_port

Name	Type	Description
connection	string	Storage switch peer port host and name
type	string	Storage switch peer type
unique_id	string	Storage switch peer unique ID
wwn	string	Storage switch peer port world wide name

source_port

Name	Type	Description
mode	string	Storage switch port operating mode
name	string	Storage switch port name
wwn	string	Storage switch peer port world wide name

connections

Name	Type	Description
peer_port	peer_port	
source_port	source_port	

component

Name	Type	Description
id	integer	Error component ID
name	string	Error component name

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

errors

Name	Type	Description
component	component	
reason	error	
severity	string	Error component severity
type	string	Error component type

fans

Name	Type	Description
name	string	Storage switch fan name
speed	integer	Storage switch fan speed
state	string	Storage switch fan state

adapter

Name	Type	Description
name	string	Node adapter name
type	string	Node adapter type
wwn	string	Node adapter world wide name

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

Name	Type	Description
name	string	Storage switch port name
speed	integer	Storage switch port speed, in Gbps

paths

Name	Type	Description
adapter	adapter	
node	node	
port	port	

sfp

Name	Type	Description
serial_number	string	Storage switch port SFP serial number
transmitter_type	string	Storage switch port SFP transmitter type

Name	Type	Description
type	string	Storage switch port SFP type

ports

Name	Type	Description
enabled	boolean	Indicates whether the storage switch port is enabled.
mode	string	Storage switch port mode
name	string	Storage switch port name
sfp	sfp	
speed	integer	Storage switch port speed, in Gbps
state	string	Storage switch port state
wwn	string	Storage switch port world wide name

power_supply_units

Name	Type	Description
name	string	Power supply unit name
state	string	Power supply unit state

temperature_sensors

Name	Type	Description
name	string	Temperature sensor name
reading	integer	Temperature sensor reading, in degrees celsius.
state	string	Temperature sensor state

vsans

Name	Type	Description
id	integer	Storage switch VSAN ID
iod	boolean	Indicates whether in-order delivery is set for a zone.
load_balancing_types	string	Storage switch VSAN load balancing type
name	string	Storage switch VSAN name
state	string	Storage switch VSAN Port state

port

Name	Type	Description
id	string	Storage switch zone port ID
name	string	Storage switch zone port

zones

Name	Type	Description
id	integer	Storage switch zone ID
name	string	Storage switch zone name
port	port	
wwn	string	Storage switch zone world wide name

storage_switch

The Storage switch object describes the storage switch properties, features and cabling.

Name	Type	Description
connections	array[connections]	
director_class	boolean	
domain_id	integer	Domain ID
errors	array[errors]	

Name	Type	Description
fabric_name	string	Storage switch fabric name
fans	array[fans]	
firmware_version	string	Storage switch firmware version
ip_address	string	IP Address
local	boolean	Indicates whether the storage switch is directly connected to the reporting cluster.
model	string	Storage switch model.
monitored_blades	array[integer]	Indicates the blades that are being monitored for a director-class switch.
monitoring_enabled	boolean	Indicates whether monitoring is enabled for the storage switch.
name	string	Storage switch name
paths	array[paths]	
ports	array[ports]	
power_supply_units	array[power_supply_units]	
role	string	Storage switch role in fabric.
state	string	Storage switch state
symbolic_name	string	Storage switch symbolic name
temperature_sensors	array[temperature_sensors]	
vendor	string	Storage switch vendor
vsans	array[vsans]	
wwn	string	Storage switch world wide name
zones	array[zones]	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a specific storage switch

GET `/storage/switches/{name}`

Introduced In: 9.9

Retrieves a specific storage switch.

Related ONTAP commands

- `storage switch show`

Learn more

- DOC /storage/switches

Parameters

Name	Type	In	Required	Description
name	string	path	True	
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
connections	array[connections]	
director_class	boolean	
domain_id	integer	Domain ID
errors	array[errors]	

Name	Type	Description
fabric_name	string	Storage switch fabric name
fans	array[fans]	
firmware_version	string	Storage switch firmware version
ip_address	string	IP Address
local	boolean	Indicates whether the storage switch is directly connected to the reporting cluster.
model	string	Storage switch model.
monitored_blades	array[integer]	Indicates the blades that are being monitored for a director-class switch.
monitoring_enabled	boolean	Indicates whether monitoring is enabled for the storage switch.
name	string	Storage switch name
paths	array[paths]	
ports	array[ports]	
power_supply_units	array[power_supply_units]	
role	string	Storage switch role in fabric.
state	string	Storage switch state
symbolic_name	string	Storage switch symbolic name
temperature_sensors	array[temperature_sensors]	
vendor	string	Storage switch vendor
vsans	array[vsans]	
wwn	string	Storage switch world wide name
zones	array[zones]	

Example response


```
{
  "connections": [
    {
      "peer_port": {
        "connection": "string",
        "type": "string",
        "unique_id": "string",
        "wwn": "string"
      },
      "source_port": {
        "mode": "string",
        "name": "string",
        "wwn": "string"
      }
    }
  ],
  "errors": [
    {
      "component": {
        "name": "string"
      },
      "reason": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
      "severity": "string",
      "type": "string"
    }
  ],
  "fabric_name": "string",
  "fans": [
    {
      "name": "string",
      "state": "string"
    }
  ],
  "firmware_version": "string",
  "ip_address": "string",
```

```
  "model": "string",
  "monitored_blades": [
    "integer"
  ],
  "name": "string",
  "paths": [
    {
      "adapter": {
        "name": "string",
        "type": "string",
        "wwn": "string"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "port": {
        "name": "string"
      }
    }
  ],
  "ports": [
    {
      "mode": "string",
      "name": "string",
      "sfp": {
        "serial_number": "string",
        "transmitter_type": "string",
        "type": "string"
      },
      "state": "string",
      "wwn": "string"
    }
  ],
  "power_supply_units": [
    {
      "name": "string",
      "state": "string"
    }
  ],
  "role": "string",
```

```
  "state": "string",
  "symbolic_name": "string",
  "temperature_sensors": [
    {
      "name": "string",
      "state": "string"
    }
  ],
  "vendor": "string",
  "vsans": [
    {
      "load_balancing_types": "string",
      "name": "string",
      "state": "string"
    }
  ],
  "wwn": "string",
  "zones": [
    {
      "name": "string",
      "port": {
        "id": "string",
        "name": "string"
      },
      "wwn": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

peer_port

Name	Type	Description
connection	string	Storage switch peer port host and name
type	string	Storage switch peer type
unique_id	string	Storage switch peer unique ID
wwn	string	Storage switch peer port world wide name

source_port

Name	Type	Description
mode	string	Storage switch port operating mode
name	string	Storage switch port name
wwn	string	Storage switch peer port world wide name

connections

Name	Type	Description
peer_port	peer_port	
source_port	source_port	

component

Name	Type	Description
id	integer	Error component ID
name	string	Error component name

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

errors

Name	Type	Description
component	component	
reason	error	
severity	string	Error component severity
type	string	Error component type

fans

Name	Type	Description
name	string	Storage switch fan name
speed	integer	Storage switch fan speed
state	string	Storage switch fan state

adapter

Name	Type	Description
name	string	Node adapter name
type	string	Node adapter type
wwn	string	Node adapter world wide name

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

port

Name	Type	Description
name	string	Storage switch port name
speed	integer	Storage switch port speed, in Gbps

paths

Name	Type	Description
adapter	adapter	
node	node	
port	port	

sfp

Name	Type	Description
serial_number	string	Storage switch port SFP serial number
transmitter_type	string	Storage switch port SFP transmitter type
type	string	Storage switch port SFP type

ports

Name	Type	Description
enabled	boolean	Indicates whether the storage switch port is enabled.
mode	string	Storage switch port mode
name	string	Storage switch port name
sfp	sfp	
speed	integer	Storage switch port speed, in Gbps
state	string	Storage switch port state
wwn	string	Storage switch port world wide name

power_supply_units

Name	Type	Description
name	string	Power supply unit name
state	string	Power supply unit state

temperature_sensors

Name	Type	Description
name	string	Temperature sensor name
reading	integer	Temperature sensor reading, in degrees celsius.
state	string	Temperature sensor state

vsans

Name	Type	Description
id	integer	Storage switch VSAN ID
iod	boolean	Indicates whether in-order delivery is set for a zone.

Name	Type	Description
load_balancing_types	string	Storage switch VSAN load balancing type
name	string	Storage switch VSAN name
state	string	Storage switch VSAN Port state

port

Name	Type	Description
id	string	Storage switch zone port ID
name	string	Storage switch zone port

zones

Name	Type	Description
id	integer	Storage switch zone ID
name	string	Storage switch zone name
port	port	
wwn	string	Storage switch zone world wide name

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage tape devices

Storage tape-devices endpoint overview

Retrieving storage tape information

The storage tape GET API retrieves all of the tapes in the cluster.

Examples

1) Retrieving a list of tapes from the cluster

The following example returns the list of tapes in the cluster:

```
# The API:
/api/storage/tape-devices

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/tape-devices" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "2d.0",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/2d.0"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
```

```
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "2d.0L1",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/2d.0L1"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "qeg-tape-brocade2-8g:0.126",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/qeg-tape-brocade2-8g%3A0.126"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
```

```
    "device_id": "stsw-broc6510-01:11.126",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/stsw-broc6510-01%3A11.126"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "stsw-broc6510-01:15.126",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/stsw-broc6510-01%3A15.126"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "stsw-broc6510-01:15.126L1",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/stsw-broc6510-01%3A15.126L1"
      }
    }
  },
```

```
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "stsw-broc6510-01:22.126",
    "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/stsw-broc6510-01%3A22.126"
      }
    }
  },
  {
    "node": {
      "uuid": "4083be52-5315-11eb-a839-00a0985ebbe7",
      "name": "st-8020-1-01",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/4083be52-5315-11eb-a839-
00a0985ebbe7"
        }
      }
    },
    "device_id": "stsw-broc6510-01:23.126",
   "_links": {
      "self": {
        "href": "/api/storage/tape-devices/4083be52-5315-11eb-a839-
00a0985ebbe7/stsw-broc6510-01%3A23.126"
      }
    }
  },
],
"num_records": 7,
"_links": {
  "self": {
    "href": "/api/storage/tape-devices"
  }
}
}
```

2) Retrieving a specific tape device from the cluster

The following example returns the requested tape device. If there is no tape with the requested UID, an error is returned.

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json"

# The response:
{
"node": {
  "uuid": "5f5275eb-5315-11eb-8ac4-00a0985e0dcf",
  "name": "st-8020-1-02",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/5f5275eb-5315-11eb-8ac4-00a0985e0dcf"
    }
  }
},
"device_id": "2d.0",
"type": "tape",
"description": "IBM LTO-6 ULT3580",
"alias": {
  "name": "st7",
  "mapping": "SN[1068000245]"
},
"aliases": [
  {
    "name": "st7",
    "mapping": "SN[1068000245]"
  }
],
"wwnn": "5001697722ee0010",
"wwpn": "5001697722ee0011",
"serial_number": "1068000245",
"interface": "sas",
"device_state": "offline",
"formats": [
  "LTO-4/5 Native Density",
  "LTO-4/5 Compressed",
  "LTO-6 2.5TB",
```

```
    "LTO-6 6.25TB Compressed"
  ],
  "storage_port": {
    "name": "2d"
  },
  "file_number": -1,
  "block_number": -1,
  "residual_count": 0,
  "density": "low",
  "device_names": [
    {
      "rewind_device": "rst0l",
      "no_rewind_device": "nrst0l",
      "unload_reload_device": "urst0l"
    },
    {
      "rewind_device": "rst0m",
      "no_rewind_device": "nrst0m",
      "unload_reload_device": "urst0m"
    },
    {
      "rewind_device": "rst0h",
      "no_rewind_device": "nrst0h",
      "unload_reload_device": "urst0h"
    },
    {
      "rewind_device": "rst0a",
      "no_rewind_device": "nrst0a",
      "unload_reload_device": "urst0a"
    }
  ],
  "reservation_type": "off",
  "_links": {
    "self": {
      "href": "/api/storage/tape-devices/5f5275eb-5315-11eb-8ac4-
00a0985e0dcf/2d.0"
    }
  }
}
```


Updating a tape device

The tape PATCH API allows the tape device to be set online or offline, positioned, and given an alias.

Examples

1) Taking a tape device offline

The following example takes a tape device offline:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"online": "false"}'

# The response:
{
"job": {
  "uuid": "9e544626-306e-11ec-8c2e-00a098b81daa",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9e544626-306e-11ec-8c2e-00a098b81daa"
    }
  }
}
}
```

2) Bringing a tape device online

The following example brings a tape device online:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"online": "true"}'

# The response:
{
"job": {
  "uuid": "9e544626-306e-11ec-8c2e-00a098b81daa",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9e544626-306e-11ec-8c2e-00a098b81daa"
    }
  }
}
}
```

3) Giving a tape device an alias

The following example assigns an alias to a tape device:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"aliases": [{"name": "st0"}]}'

# The response:
{
}
```

4) Removing a tape device's aliases

The following example clears any aliases previously assigned to a tape device:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"aliases": []}'

# The response:
{
}
```

5) Rewinding a tape device

The following example rewinds a tape device:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"position": {"operation":
"rewind"}}'

# The response:
{
"job": {
  "uuid": "9e544626-306e-11ec-8c2e-00a098b81daa",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/9e544626-306e-11ec-8c2e-00a098b81daa"
    }
  }
}
}
```

6) Forwarding the tape five files

The following example moves the tape forward five file records:

```
# The API:
/api/storage/tape-devices/{node.uuid}/{device_id}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/tape-devices/5f5275eb-5315-
11eb-8ac4-00a0985e0dcf/2d.0" -H "accept: application/hal+json" -H
"Content-Type: application/hal_json" -d '{"position": {"operation": "fsf",
"count": 5}}'

# The response:
{
"job": {
  "uuid": "954c20d5-306e-11ec-8c2e-00a098b81daa",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/954c20d5-306e-11ec-8c2e-00a098b81daa"
    }
  }
}
}
```

Retrieve tape devices

GET `/storage/tape-devices`

Introduced In: 9.9

Retrieves a collection of tape devices.

Related ONTAP commands

- `storage tape show`

Learn more

- DOC /storage/tape-devices

Parameters

Name	Type	In	Required	Description
reservation_type	string	query	False	Filter by reservation_type
node.uuid	string	query	False	Filter by node.uuid

Name	Type	In	Required	Description
node.name	string	query	False	Filter by node.name
device_id	string	query	False	Filter by device_id
description	string	query	False	Filter by description
formats	string	query	False	Filter by formats
type	string	query	False	Filter by type
wwpn	string	query	False	Filter by wwpn
wwnn	string	query	False	Filter by wwnn
residual_count	integer	query	False	Filter by residual_count
file_number	integer	query	False	Filter by file_number
block_number	integer	query	False	Filter by block_number
device_names.unload_reload_device	string	query	False	Filter by device_names.unload_reload_device
device_names.rewind_device	string	query	False	Filter by device_names.rewind_device
device_names.no_rewind_device	string	query	False	Filter by device_names.no_rewind_device
online	boolean	query	False	Filter by online • Introduced in: 9.11
density	string	query	False	Filter by density • Introduced in: 9.11
serial_number	string	query	False	Filter by serial_number

Name	Type	In	Required	Description
interface	string	query	False	Filter by interface
device_state	string	query	False	Filter by device_state
aliases.name	string	query	False	Filter by aliases.name • Introduced in: 9.11
aliases.mapping	string	query	False	Filter by aliases.mapping • Introduced in: 9.11
alias.mapping	string	query	False	Filter by alias.mapping
alias.name	string	query	False	Filter by alias.name
storage_port.name	string	query	False	Filter by storage_port.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[tape_device]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "alias": {
        "mapping": "SN[10WT000933]",
        "name": "st6"
      },
      "aliases": [
        {
          "mapping": "SN[10WT000933]",
          "name": "st6"
        }
      ],
      "block_number": 0,
      "density": "low",
      "description": "QUANTUM LTO-8 ULTRIUM",
      "device_id": "1a.0",
      "device_names": [
        {
          "no_rewind_device": "nrst6l",
          "rewind_device": "rst6l",
          "unload_reload_device": "urst6l"
        }
      ],
      "device_state": "read_write_enabled",
      "file_number": 0,
      "formats": [
        "LTO-7 6TB",
        "LTO-7 15TB Compressed",
        "LTO-8 12TB",
        "LTO-8 30TB Compressed"
      ],
      "interface": "sas",
      "node": {
        "_links": {
```

```
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "position": {
          "count": 5,
          "operation": "rewind"
        },
        "reservation_type": "off",
        "residual_count": 0,
        "serial_number": "10WT00093",
        "storage_port": {
          "name": "2b"
        },
        "type": "tape",
        "wwnn": "500507631295741c",
        "wwpn": "500507631295741c"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

alias

Name	Type	Description
mapping	string	This field will no longer be supported in a future release. Use aliases.mapping instead.
name	string	This field will no longer be supported in a future release. Use aliases.name instead.

aliases

Name	Type	Description
mapping	string	Alias mapping.
name	string	Alias name.

device_names

Name	Type	Description
no_rewind_device	string	Device name for no rewind.
rewind_device	string	Device name for rewind.
unload_reload_device	string	Device name for unload or reload operations.

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

position

Name	Type	Description
count	integer	Number of times to run position operation.
operation	string	Position operation.

storage_port

Name	Type	Description
name	string	Initiator port.

tape_device

Name	Type	Description
alias	alias	
aliases	array[aliases]	
block_number	integer	Block number.
density	string	Density.
description	string	
device_id	string	
device_names	array[device_names]	
device_state	string	Operational state of the device.
file_number	integer	File number.
formats	array[string]	Tape cartridge format.

Name	Type	Description
interface	string	Device interface type.
node	node	
online	boolean	
position	position	
reservation_type	string	
residual_count	integer	Residual count of the last I/O operation.
serial_number	string	
storage_port	storage_port	
type	string	Device type.
wwnn	string	World Wide Node Name.
wwpn	string	World Wide Port Name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a tape device

GET `/storage/tape-devices/{node.uuid}/{device_id}`

Introduced In: 9.9

Retrieves a specific tape device.

Related ONTAP commands

- `storage tape show`

Learn more

- DOC /storage/tape-devices

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
device_id	string	path	True	Device ID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
alias	alias	
aliases	array[aliases]	
block_number	integer	Block number.
density	string	Density.
description	string	
device_id	string	
device_names	array[device_names]	
device_state	string	Operational state of the device.
file_number	integer	File number.
formats	array[string]	Tape cartridge format.
interface	string	Device interface type.

Name	Type	Description
node	node	
online	boolean	
position	position	
reservation_type	string	
residual_count	integer	Residual count of the last I/O operation.
serial_number	string	
storage_port	storage_port	
type	string	Device type.
wwnn	string	World Wide Node Name.
wwpn	string	World Wide Port Name.

Example response


```
{
  "alias": {
    "mapping": "SN[10WT000933]",
    "name": "st6"
  },
  "aliases": [
    {
      "mapping": "SN[10WT000933]",
      "name": "st6"
    }
  ],
  "block_number": 0,
  "density": "low",
  "description": "QUANTUM LTO-8 ULTRIUM",
  "device_id": "1a.0",
  "device_names": [
    {
      "no_rewind_device": "nrst6l",
      "rewind_device": "rst6l",
      "unload_reload_device": "urst6l"
    }
  ],
  "device_state": "read_write_enabled",
  "file_number": 0,
  "formats": [
    "LTO-7 6TB",
    "LTO-7 15TB Compressed",
    "LTO-8 12TB",
    "LTO-8 30TB Compressed"
  ],
  "interface": "sas",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "position": {
    "count": 5,
    "operation": "rewind"
  },
```

```
  "reservation_type": "off",
  "residual_count": 0,
  "serial_number": "10WT00093",
  "storage_port": {
    "name": "2b"
  },
  "type": "tape",
  "wwnn": "500507631295741c",
  "wwpn": "500507631295741c"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

alias

Name	Type	Description
mapping	string	This field will no longer be supported in a future release. Use aliases.mapping instead.
name	string	This field will no longer be supported in a future release. Use aliases.name instead.

aliases

Name	Type	Description
mapping	string	Alias mapping.
name	string	Alias name.

device_names

Name	Type	Description
no_rewind_device	string	Device name for no rewind.
rewind_device	string	Device name for rewind.
unload_reload_device	string	Device name for unload or reload operations.

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	
uuid	string	

position

Name	Type	Description
count	integer	Number of times to run position operation.
operation	string	Position operation.

storage_port

Name	Type	Description
name	string	Initiator port.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a tape device

PATCH `/storage/tape-devices/{node.uuid}/{device_id}`

Introduced In: 9.11

Updates a specific tape device.

Related ONTAP commands

- `storage tape alias-set`
- `storage tape alias-clear`
- `storage tape online`
- `storage tape offline`
- `storage tape position`

Learn more

- DOC /storage/tape-devices

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
device_id	string	path	True	Device ID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
alias	alias	
aliases	array[aliases]	
block_number	integer	Block number.
density	string	Density.
description	string	
device_id	string	
device_names	array[device_names]	

Name	Type	Description
device_state	string	Operational state of the device.
file_number	integer	File number.
formats	array[string]	Tape cartridge format.
interface	string	Device interface type.
node	node	
online	boolean	
position	position	
reservation_type	string	
residual_count	integer	Residual count of the last I/O operation.
serial_number	string	
storage_port	storage_port	
type	string	Device type.
wwnn	string	World Wide Node Name.
wwpn	string	World Wide Port Name.

Example request


```
{
  "alias": {
    "mapping": "SN[10WT000933]",
    "name": "st6"
  },
  "aliases": [
    {
      "mapping": "SN[10WT000933]",
      "name": "st6"
    }
  ],
  "block_number": 0,
  "density": "low",
  "description": "QUANTUM LTO-8 ULTRIUM",
  "device_id": "1a.0",
  "device_names": [
    {
      "no_rewind_device": "nrst6l",
      "rewind_device": "rst6l",
      "unload_reload_device": "urst6l"
    }
  ],
  "device_state": "read_write_enabled",
  "file_number": 0,
  "formats": [
    "LTO-7 6TB",
    "LTO-7 15TB Compressed",
    "LTO-8 12TB",
    "LTO-8 30TB Compressed"
  ],
  "interface": "sas",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "position": {
    "count": 5,
    "operation": "rewind"
  },
  "reservation_type": "off",
  "residual_count": 0,
  "serial_number": "10WT00093",
  "storage_port": {
    "name": "2b"
```

```
    },
    "type": "tape",
    "wwnn": "500507631295741c",
    "wwpn": "500507631295741c"
  }
```

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
11403264	Tape operation "<operation>\" failed on tape device \"<device_id>\". This may indicate tape reached end of data, a hardware error, an illegal request, an invalid name format, or an aborted command.</device_id></operation>
11403265	Tape operation "<operation>\" failed because it encountered an unexpected file mark on tape device \"<device_id>\".</device_id></operation>
11403266	Internal error. Unknown tape parameter for tape device "<device_id>\".</device_id>
11403267	Tape device "<device_id>\" is busy.</device_id>
11403268	No tape loaded for "<operation>\" operation on tape drive \"<device_id>\".</device_id></operation>
11403269	Tape device "<device_id>\" unknown.</device_id>
11403270	Tape alias name "<alias>\" already exists.</alias>
11403271	The format of the tape alias name "<alias>\" is invalid. Use \"st\" or \"mc\" followed by one or more digits.</alias>
11403273	Internal error. Tape alias name "<alias>\" not saved.</alias>

Error Code	Description
11403274	Internal error. Tape alias operation "<operation>\" for alias name \"<alias>\" failed.</alias></operation>
11403275	Tape alias name "<alias>\" not found.</alias>
11403277	Tape device "<device_id>\" is reserved by another host.</device_id>
11403278	Invalid count value specified with operation "<operation>\". Valid values are from 0 to {1}.</operation>

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

alias

Name	Type	Description
mapping	string	This field will no longer be supported in a future release. Use aliases.mapping instead.
name	string	This field will no longer be supported in a future release. Use aliases.name instead.

aliases

Name	Type	Description
mapping	string	Alias mapping.
name	string	Alias name.

device_names

Name	Type	Description
no_rewind_device	string	Device name for no rewind.
rewind_device	string	Device name for rewind.
unload_reload_device	string	Device name for unload or reload operations.

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

position

Name	Type	Description
count	integer	Number of times to run position operation.
operation	string	Position operation.

storage_port

Name	Type	Description
name	string	Initiator port.

tape_device

Name	Type	Description
alias	alias	
aliases	array[aliases]	
block_number	integer	Block number.
density	string	Density.
description	string	
device_id	string	
device_names	array[device_names]	
device_state	string	Operational state of the device.
file_number	integer	File number.
formats	array[string]	Tape cartridge format.
interface	string	Device interface type.
node	node	
online	boolean	
position	position	
reservation_type	string	
residual_count	integer	Residual count of the last I/O operation.
serial_number	string	
storage_port	storage_port	

Name	Type	Description
type	string	Device type.
wwnn	string	World Wide Node Name.
wwpn	string	World Wide Port Name.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage volume efficiency policies

Storage volume-efficiency-policies endpoint overview

Overview

Volume efficiency policies specify information about efficiency policies that are applied to the volume.

Volume efficiency policy APIs

The following APIs are used to perform operations related to volume efficiency policy information:

– POST /api/storage/volume-efficiency-policies

– GET /api/storage/volume-efficiency-policies

– GET /api/storage/volume-efficiency-policies/{uuid}

– PATCH /api/storage/volume-efficiency-policies/{uuid}

– DELETE /api/storage/volume-efficiency-policies/{uuid}

Examples

Creating a volume efficiency policy

The POST operation is used to create a volume efficiency policy with the specified attributes.

```
# The API:
/api/storage/volume-efficiency-policies

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volume-efficiency-policies"
-H "accept: application/hal+json" -d '{"name": "new_policy", "type":
"scheduled", "schedule": { "name": "daily" }, "duration": "2",
"qos_policy": "best_effort", "enabled": "true", "comment": "schedule-
policy", "svm": { "name": "vs1"}}'

# The response:
HTTP/1.1 201 Created
Date: Tue, 12 Mar 2019 21:20:24 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/storage/volume-efficiency-policies/a69d8173-450c-11e9-aa44-
005056bbc848
Content-Length: 369
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "uuid": "a69d8173-450c-11e9-aa44-005056bbc848",
    "svm": {
      "name": "vs1"
    },
    "name": "new_policy",
    "type": "scheduled",
    "schedule":{
      "name": "daily"
    },
    "duration": "2",
    "qos_policy": "best_effort",
    "enabled": "true",
    "comment": "schedule-policy"
  }
]
}
```

Retrieving volume efficiency policy attributes

The GET operation is used to retrieve volume efficiency policy attributes.

```
# The API:
/api/storage/volume-efficiency-policies

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volume-efficiency-policies" -H
"accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:17:17 GMT
Server: libzapid-http
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 686
Content-Type: application/json
{
"records": [
  {
    "uuid": "3c112527-2fe8-11e9-b55e-005056bbf1c8",
    "name": "default",
    "_links": {
      "self": {
        "href": "/api/storage/volume-efficiency-policies/3c112527-2fe8-
11e9-b55e-005056bbf1c8"
      }
    }
  },
  {
    "uuid": "3c1c1656-2fe8-11e9-b55e-005056bbf1c8",
    "name": "default-1weekly",
    "_links": {
      "self": {
        "href": "/api/storage/volume-efficiency-policies/3c1c1656-2fe8-
11e9-b55e-005056bbf1c8"
      }
    }
  },
  {
    "uuid": "3c228b82-2fe8-11e9-b55e-005056bbf1c8",
    "name": "none",
    "_links": {
      "self": {
        "href": "/api/storage/volume-efficiency-policies/3c228b82-2fe8-
11e9-b55e-005056bbf1c8"
      }
    }
```

```
    }
  ],
  "num_records": 3,
  "_links": {
    "self": {
      "href": "/api/storage/volume-efficiency-policies/"
    }
  }
}
```


Retrieving the attributes of a specific volume efficiency policy

The GET operation is used to retrieve the attributes of a specific volume efficiency policy.

```
# The API:
/api/storage/volume-efficiency-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volume-efficiency-
policies/3c112527-2fe8-11e9-b55e-005056bbf1c8" -H "accept:
application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:24:48 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 381
Content-Type: application/json
{
"uuid": "3c112527-2fe8-11e9-b55e-005056bbf1c8",
"name": "new_policy",
"type": "scheduled",
"schedule": {
  "name": "daily"
}
"duration": "2",
"qos_policy": "best_effort",
"enabled": "true",
"comment": "schedule-policy",
"svm": {
      "name": "vs1"
}
"_links": {
  "self": {
    "href": "/api/storage/volume-efficiency-policies/3c112527-2fe8-11e9-
b55e-005056bbf1c8"
  }
}
}
```

Updating a volume efficiency policy

The PATCH operation is used to update the specific attributes of a volume efficiency policy.

```
# The API:
/api/storage/volume-efficiency-policies/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volume-efficiency-
policies/ae9e65c4-4506-11e9-aa44-005056bbc848" -d '{"duration": "3" }' -H
"accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:27:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Deleting a volume efficiency policy

The DELETE operation is used to delete a volume efficiency policy.

```
# The API:
/api/storage/volume-efficiency-policies/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volume-efficiency-policies/
ae9e65c4-4506-11e9-aa44-005056bbc848" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Tue, 12 Mar 2019 21:19:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/json
```

Retrieve volume efficiency policies

GET `/storage/volume-efficiency-policies`

Introduced In: 9.8

Retrieves a collection of volume efficiency policies.

Related ONTAP commands

- `volume efficiency policy show`

Learn more

- DOC /storage/volume-efficiency-policies

Parameters

Name	Type	In	Required	Description
comment	string	query	False	Filter by comment
duration	integer	query	False	Filter by duration
name	string	query	False	Filter by name
schedule.name	string	query	False	Filter by schedule.name
uuid	string	query	False	Filter by uuid
qos_policy	string	query	False	Filter by qos_policy
start_threshold_percent	integer	query	False	Filter by start_threshold_percent
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
type	string	query	False	Filter by type
enabled	boolean	query	False	Filter by enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[volume_efficiency_policy]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "name": "string",
      "qos_policy": "string",
      "schedule": {
        "name": "string"
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "type": "string",
      "uuid": "string"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
name	string	Schedule at which volume efficiency policies are captured on the SVM. Some common schedules already defined in the system are hourly, daily, weekly, at 5 minute intervals, and at 8 hour intervals. Volume efficiency policies with custom schedules can be referenced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_efficiency_policy

Name	Type	Description
_links	_links	
comment	string	A comment associated with the volume efficiency policy.
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
name	string	Name of the volume efficiency policy.
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a volume efficiency policy

POST `/storage/volume-efficiency-policies`

Introduced In: 9.8

Creates a volume efficiency policy.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the volume efficiency policy.
- `name` - Name for the volume efficiency policy.

Recommended optional properties

- `type` - Type of volume policy.
- `schedule` - Schedule the volume efficiency defined in minutes, hourly, daily and weekly.
- `duration` - Indicates the allowed duration for a session for policy type "scheduled".
- `start_threshold_percent` - Indicates the start threshold percentage for the policy type "threshold". It is mutually exclusive of the schedule.
- `qos_policy` - QoS policy for the sis operation.
- `comment` - A comment associated with the volume efficiency policy.
- `enabled` - Is the volume efficiency policy enabled?

Default property values

If not specified in POST, the following default property values are assigned:

- `type` - scheduled
- `start_threshold_percent` - 20
- `enabled` - true
- `qos_policy` - best_effort
- `schedule` - daily

Related ONTAP commands

- `volume efficiency policy create`

Learn more

- DOC /storage/volume-efficiency-policies

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A comment associated with the volume efficiency policy.
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
name	string	Name of the volume efficiency policy.

Name	Type	Description
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

Example request

```
{
  "comment": "string",
  "name": "string",
  "qos_policy": "string",
  "schedule": {
    "name": "string"
  },
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918702	The specified operation on the volume efficiency policies endpoint is not supported on this platform.
6881341	Specified schedule not found.
6881344	Failed to queue specified job.
6881345	This operation is not permitted on a node SVM.
6881349	Policy name is not valid.
6881351	Policy name is too long.
6881352	Policy name is not valid.
6881362	Threshold percentage cannot be less than 1 percent.
6881433	For "threshold" type policy, "schedule and duration" is not supported.
6881435	Only a policy of type "threshold" can set the "start-threshold-percent" attribute.
6881454	An efficiency policy of type "threshold" requires an effective cluster version of ONTAP 8.3 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Schedule at which volume efficiency policies are captured on the SVM. Some common schedules already defined in the system are hourly, daily, weekly, at 5 minute intervals, and at 8 hour intervals. Volume efficiency policies with custom schedules can be referenced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_efficiency_policy

Name	Type	Description
comment	string	A comment associated with the volume efficiency policy.

Name	Type	Description
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
name	string	Name of the volume efficiency policy.
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a volume efficiency policy

DELETE `/storage/volume-efficiency-policies/{uuid}`

Introduced In: 9.8

Deletes a volume efficiency policy.

Related ONTAP commands

- `volume efficiency policy delete`

Learn more

- DOC /storage/volume-efficiency-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Volume efficiency policy UUID

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
918702	The specified operation on the volume efficiency policies endpoint is not supported on this platform.
6881346	The policy was not deleted because the policy is in use by at least one volume.
6881431	The specified policy is a predefined policy and cannot be deleted.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve volume efficiency policy details

GET `/storage/volume-efficiency-policies/{uuid}`

Introduced In: 9.8

Retrieves the details of the specified volume efficiency policy.

Related ONTAP commands

- `volume efficiency policy show`

Learn more

- DOC /storage/volume-efficiency-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Volume efficiency policy UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A comment associated with the volume efficiency policy.
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
name	string	Name of the volume efficiency policy.
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
svm	svm	SVM, applies only to SVM-scoped objects.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "name": "string",
  "qos_policy": "string",
  "schedule": {
    "name": "string"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "string",
  "uuid": "string"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

schedule

Name	Type	Description
name	string	Schedule at which volume efficiency policies are captured on the SVM. Some common schedules already defined in the system are hourly, daily, weekly, at 5 minute intervals, and at 8 hour intervals. Volume efficiency policies with custom schedules can be referenced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a volume efficiency policy

PATCH `/storage/volume-efficiency-policies/{uuid}`

Introduced In: 9.8

Updates a volume efficiency policy.

Related ONTAP commands

- `volume efficiency policy modify`

Learn more

- DOC /storage/volume-efficiency-policies

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Volume efficiency policy UUID

Request Body

Name	Type	Description
comment	string	A comment associated with the volume efficiency policy.

Name	Type	Description
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

Example request

```
{
  "comment": "string",
  "qos_policy": "string",
  "schedule": {
    "name": "string"
  },
  "type": "string",
  "uuid": "string"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918702	The specified operation on the volume efficiency policies endpoint is not supported on this platform.
6881341	Specified schedule not found.
6881344	Failed to queue specified job.
6881351	Policy name is too long.
6881352	Policy name is not valid.
6881362	Threshold percentage cannot be less than 1 percent.
6881433	For "threshold" type policy, "schedule and duration" is not supported.
6881435	Only a policy of type "threshold" can set the "start-threshold-percent" attribute.
6881438	For "inline-only and auto" policy, modification of attributes is not allowed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

schedule

Name	Type	Description
name	string	Schedule at which volume efficiency policies are captured on the SVM. Some common schedules already defined in the system are hourly, daily, weekly, at 5 minute intervals, and at 8 hour intervals. Volume efficiency policies with custom schedules can be referenced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume_efficiency_policy

Name	Type	Description
comment	string	A comment associated with the volume efficiency policy.

Name	Type	Description
duration	integer	This field is used with the policy type "scheduled" to indicate the allowed duration for a session, in hours. Possible value is a number between 0 and 999 inclusive. Default is unlimited indicated by value 0.
enabled	boolean	Is the volume efficiency policy enabled?
qos_policy	string	QoS policy for the sis operation. Possible values are background and best_effort. In background, sis operation will run in background with minimal or no impact on data serving client operations. In best_effort, sis operations may have some impact on data serving client operations.
schedule	schedule	
start_threshold_percent	integer	This field is used with the policy type "threshold" to indicate the threshold percentage for triggering the volume efficiency policy. It is mutually exclusive of the schedule.
type	string	Type of volume efficiency policy.
uuid	string	Unique identifier of volume efficiency policy.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage storage volumes

Storage volumes endpoint overview

Overview

FlexVol volumes are logical containers used by ONTAP to serve data to clients. They contain file systems in a NAS environment and LUNs in a SAN environment.

A FlexGroup volume is a scale-out NAS container that provides high performance along with automatic load distribution and scalability. A FlexGroup volume contains several constituents that automatically and transparently share the traffic.

FlexClone volumes are writable, point-in-time copies of a FlexVol volume. At this time, FlexClones of FlexGroups are not supported.

Volumes with SnapLock type Compliance or Enterprise, are referred to as SnapLock volumes. It is possible to create a SnapLock volume by specifying SnapLock parameters.

ONTAP storage APIs allow you to create, modify, and monitor volumes and aggregates.

Storage efficiency

Storage efficiency is used to remove duplicate blocks in the data and to compress the data. Efficiency has deduplication, compression, cross volume deduplication, compaction, policy-name, enabled, application_io_size, compression_type and storage_efficiency_mode options. On All Flash systems, all efficiencies are enabled by default, on volume creation. Options such as "background/inline/both" are treated as both, which means both background and inline are enabled for any efficiency option. The option "none" disables both background and inline efficiency. Application-io-size and compression-type decides type of compression behavior in the system. Storage efficiency mode decides if the system is to run in default/efficient mode. Detailed information about each field is available under efficiency object for storage efficiency fields.

To enable any efficiency option on all-flash or FAS systems, background deduplication is always enabled.

Quotas

Quotas provide a way to restrict or track the files and space usage by a user, group, or qtree. Quotas are enabled for a specific FlexVol or a FlexGroup volume.

The following APIs can be used to enable or disable and obtain quota state for a FlexVol or a FlexGroup volume:

– PATCH /api/storage/volumes/{uuid} -d '{"quota.enabled":"true"}'

– PATCH /api/storage/volumes/{uuid} -d '{"quota.enabled":"false"}'

– GET /api/storage/volumes/{uuid}/?fields=quota.state

File System Analytics

File system analytics (FSA) provide a quick method for obtaining information summarizing properties of all files within any directory tree of a volume. For more information on FSA, see DOC /storage/volumes{volume.uuid}/files/{path} . Analytics can be enabled or disabled on individual volumes.

The following APIs can be used to enable or disable and obtain analytics state for a FlexVol volume or a FlexGroup volume:

– PATCH /api/storage/volumes/{uuid} -d '{"analytics.state":"on"}'

– PATCH /api/storage/volumes/{uuid} -d '{"analytics.state":"off"}'

– GET /api/storage/volumes/{uuid}/?fields=analytics

If the `analytics.state` field is "initializing" or "initialization_paused" and is set to "off", the FSA initialization scan is cancelled. If FSA is turned on again, the initialization scan restarts.

QoS

QoS policy and settings enforce Service Level Objectives (SLO) on a volume. SLO can be set by specifying qos.max_throughput_iops and/or qos.max_throughput_mbps or qos.min_throughput_iops and/or qos.min_throughput_mbps. Specifying min_throughput_iops or min_throughput_mbps is only supported on volumes hosted on a node that is flash optimized. A pre-created QoS policy can also be used by specifying qos.name or qos.uuid property.

Performance monitoring

Performance of a volume can be monitored by the `metric.*` and `statistics.*` fields. These show the performance of the volume in terms of IOPS, latency and throughput. The `metric.*` fields denote an average whereas `statistics.*` fields denote a real-time monotonically increasing value aggregated across all nodes.

Rebalancing

Non-disruptive capacity rebalancing of a FlexGroup volume is configured by the `rebalancing.*` fields. If not explicitly set, default values are provided. To initiate a capacity rebalancing operation, `rebalancing.state` is set to 'starting'. The `rebalancing.max_runtime` can be optionally set, which is the maximum length of time you want the capacity rebalancing to run for. You can stop capacity rebalancing by setting `rebalancing.state` to 'stopping'. You can also modify the configurations `rebalancing.max_runtime`, `rebalancing.max_threshold`, `rebalancing.min_threshold`, `rebalancing.max_file_moves`, `rebalancing.min_file_size`, and `rebalancing.exclude_snapshots`. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current configuration values. Once the operation is started, changes to the configuration are not allowed, until the capacity rebalanding operations stops, either by exceeding their maximum runtime or by being stopped. To see runtime information about each constituent, for a running rebalancing operation, use the 'rebalancing.engine.*' fields.

Volume APIs

The following APIs are used to perform operations related with FlexVol volumes and FlexGroup volumes:

– POST /api/storage/volumes

– GET /api/storage/volumes

– GET /api/storage/volumes/{uuid}

– PATCH /api/storage/volumes/{uuid}

– DELETE /api/storage/volumes/{uuid}

Examples

Creating a volume

The POST request is used to create a new volume and to specify its properties.

```
# The API:
/api/storage/volumes

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json" -d '{"name": "vol1",
"aggregates":[{"name":"aggr1"}], "svm":{"name" : "vs1"}}'

# The response:
{
"job": {
  "uuid": "b89bc5dd-94a3-11e8-a7a3-0050568edf84",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b89bc5dd-94a3-11e8-a7a3-0050568edf84"
    }
  }
}
}
```

Creating a SnapLock volume and specifying its properties using POST

```
# The API:
/api/storage/volumes

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json" -d '{"name": "vol1",  "aggregates":[{"name":
"aggr1"}],  "svm":{"name" : "vs1"}, "snaplock":{"retention":{"default":
"P20Y"}, "type": "compliance"}}'

# The response:
{
"job": {
  "uuid": "e45b123b-c228-11e8-aa20-0050568e36bb",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/e45b123b-c228-11e8-aa20-0050568e36bb"
    }
  }
}
}
```

Creating a FlexGroup volume and specifying its properties using POST

```
# The API:
/api/storage/volumes

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json" -d '{"name" : "vol1", "state" : "online", "type" :
"RW", "aggregates" : [{"name" : "aggr1"}, {"name" : "aggr2"},
{"name":"aggr3"}], "constituents_per_aggregate" : "1", "svm" : {"name" :
"vs1"}, "size" : "240MB", "encryption" : {"enabled" : "False"},
"efficiency" : {"compression" : "both"}, "autosize" : {"maximum" :
"500MB", "minimum" : "240MB"}}'

# The response:
{
"job": {
  "uuid": "3cfa38bd-3a78-11e9-ae39-0050568ed7dd",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3cfa38bd-3a78-11e9-ae39-0050568ed7dd"
    }
  }
}
}
```

Creating a FlexGroup volume and specifying its properties using POST when the Performance_NAS license is installed.

```
# The API:
/api/storage/volumes

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json" -d '{"name" : "vol1", "state" : "online", "type" :
"RW", "svm" : {"name" : "vs1"}, "size" : "240TB", "encryption" :
{"enabled" : "False"}, "efficiency" : {"compression" : "both"}, "autosize"
: {"maximum" : "500TB", "minimum" : "240TB"}}'

# The response:
{
"job": {
  "uuid": "3cfa38bd-3a78-11e9-ae39-0050568ed7dd",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3cfa38bd-3a78-11e9-ae39-0050568ed7dd"
    }
  }
}
}
```

Creating a FlexClone and specifying its properties using POST

```
# The API:
/api/storage/volumes

# The call:
curl -X POST  "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json" -d '{"name":"vol1_clone", "clone": {"parent_volume":
{"name": "vol1"}, "is_flexclone": "true"},"svm":{"name": "vs0"}}'

# The response:
HTTP/1.1 202 Accepted
Date: Tue, 26 Feb 2019 09:06:22 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/storage/volumes/?name=vol1_clone
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "c9ee0040-39a5-11e9-9b24-00a098439a83",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c9ee0040-39a5-11e9-9b24-00a098439a83"
    }
  }
}
}
```

Volumes reported in the GET REST API

The following types of volumes are reported:

– RW, DP and LS volumes

– FlexGroup volume

– FlexCache volume

– FlexClone volume

– FlexGroup constituent

The following volumes are not reported:

– DEL and TMP type volume

– Node Root volume

– System Vserver volume

– FlexCache constituent

Examples

Retrieving the list of volumes

```
# The API:
/api/storage/volumes

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "2d1167cc-c3f2-495a-a23f-8f50b071b9b8",
    "name": "vsdata_root",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/2d1167cc-c3f2-495a-a23f-
8f50b071b9b8"
      }
    }
  },
  {
    "uuid": "3969be7e-78b4-4b4c-82a4-fa86331f03df",
    "name": "vsfg_root",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/3969be7e-78b4-4b4c-82a4-
fa86331f03df"
      }
    }
  },
  {
    "uuid": "59c03ac5-e708-4ce8-a676-278dc249fda2",
    "name": "svm_root",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/59c03ac5-e708-4ce8-a676-
278dc249fda2"
      }
    }
```

```
  },
  {
    "uuid": "6802635b-8036-11e8-aae5-0050569503ac",
    "name": "fgvol",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/6802635b-8036-11e8-aae5-
0050569503ac"
      }
    }
  },
  {
    "uuid": "d0c3359c-5448-4a9b-a077-e3295a7e9057",
    "name": "datavol",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/d0c3359c-5448-4a9b-a077-
e3295a7e9057"
      }
    }
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/storage/volumes"
  }
}
}
```

Retrieving the attributes of a volume

The GET request is used to retrieve the attributes of a volume.

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -H "accept: application/hal+json"

# The response:
{
"uuid": "d0c3359c-5448-4a9b-a077-e3295a7e9057",
"comment": "This is a data volume",
"create_time": "2018-07-05T14:56:44+05:30",
```

```
"language": "en_us",
"name": "datavol",
"size": 20971520,
"state": "online",
"style": "flexvol",
"tiering_policy": "auto",
"type": "rw",
"aggregates": [
  {
    "name": "data",
    "uuid": "aa742322-36bc-4d98-bbc4-0a827534c035",
    "_links": {
      "self": {
        "href": "/api/cluster/aggregates/data"
      }
    }
  }
],
"efficiency": {
  "ratio": 1
},
"encryption": {
  "enabled": false,
  "state": "none",
  "key_id": "",
  "type" : "none"
},
"error_state": {
  "has_bad_blocks": false,
  "is_inconsistent": false
},
"files": {
  "maximum": 566,
  "used": 96
},
"nas": {
  "gid": 2468,
  "security_style": "unix",
  "uid": 1357,
  "unix_permissions": 4755,
  "export_policy": {
    "name": "default",
    "id": 8589934593
  },
  "junction_parent": {
    "name": "vol1",
```

```
    "uuid": "a2564f80-25fb-41e8-9b49-44de2600991f",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/a2564f80-25fb-41e8-9b49-
44de2600991f"
      }
    }
  }
},
"metric": {
  "timestamp": "2019-04-09T05:50:15Z",
  "status": "ok",
  "duration": "PT15S",
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "cloud": {
    "timestamp": "2019-04-09T05:50:15Z",
    "status": "ok",
    "duration": "PT15S",
    "iops" : {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "latency": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
```

```
      }
    },
    "flexcache": {
      "timestamp": "2019-04-09T05:50:15Z",
      "status": "ok",
      "duration": "PT1D",
      "cache_miss_percent": 0,
      "bandwidth_savings": 0
    }
  },
  "statistics": {
    "timestamp": "2019-04-09T05:50:42Z",
    "status": "ok",
    "latency_raw": {
      "other": 38298,
      "total": 38298,
      "read": 0,
      "write": 0
    },
    "iops_raw": {
      "read": 0,
      "write": 0,
      "other": 3,
      "total": 3
    },
    "throughput_raw": {
      "read": 0,
      "write": 0,
      "other": 0,
      "total": 0
    },
    "cloud": {
      "timestamp": "2019-04-09T05:50:42Z",
      "status": "ok",
      "iops_raw" : {
        "read": 0,
        "write": 0,
        "other": 0,
        "total": 0
      },
      "latency_raw": {
        "read": 0,
        "write": 0,
        "other": 0,
        "total": 0
      }
```

```
    },
    "flexcache_raw": {
      "timestamp": "2019-04-09T05:50:15Z",
      "status": "ok",
      "cache_miss_blocks": 0,
      "client_requested_blocks": 0
    }
  },
  "qos": {
    "policy": {
    "min_throughput_iops": 0,
    "min_throughput_mbps": 0,
    "max_throughput_iops": 1000,
    "max_throughput_mbps": 0,
    "uuid": "228454af-5a8b-11e9-bd5b-005056ac6f1f",
    "name": "pg1"
    }
  },
  "snaplock": {
    "append_mode_enabled": false,
    "autocommit_period": "none",
    "compliance_clock_time": "2019-05-24T10:59:00+05:30",
    "expiry_time": "2038-01-19T08:44:28+05:30",
    "is_audit_log": false,
    "litigation_count": 0,
    "privileged_delete": "disabled",
    "type": "enterprise",
    "retention": {
      "default": "P0Y",
      "minimum": "P0Y",
      "maximum": "P30Y"
    }
  },
  "snapshot_policy": {
    "name": "default"
  },
  "svm": {
    "name": "vsdata",
    "uuid": "d61b69f5-7458-11e8-ad3f-0050569503ac"
  }
  }
```


Retrieving the quota state of a FlexVol or a FlexGroup volume

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb20da45-4f6b-11e9-
9a71-005056a7f717/?fields=quota.state" -H "accept: application/hal+json"

# The response:
{
"uuid": "cb20da45-4f6b-11e9-9a71-005056a7f717",
"name": "fv",
"quota": {
  "state": "on"
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/cb20da45-4f6b-11e9-9a71-005056a7f717/"
  }
}
}
```

Retrieving the constituents of a FlexGroup volume

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/volumes?flexgroup.uuid=fd87d06f-8876-11ec-94a3-
005056a7484f&is_constituent=true" -H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "uuid": "fd877f7c-8876-11ec-94a3-005056a7484f",
    "name": "fg__0001",
    "flexgroup": {
      "uuid": "fd87d06f-8876-11ec-94a3-005056a7484f"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/fd877f7c-8876-11ec-94a3-
005056a7484f?is_constituent=true"
```

```
      }
    }
  },
  {
    "uuid": "fea631d6-8876-11ec-94a3-005056a7484f",
    "name": "fg__0002",
    "flexgroup": {
      "uuid": "fd87d06f-8876-11ec-94a3-005056a7484f"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/fea631d6-8876-11ec-94a3-
005056a7484f?is_constituent=true"
      }
    }
  },
  {
    "uuid": "ff38a34e-8876-11ec-94a3-005056a7484f",
    "name": "fg__0003",
    "flexgroup": {
      "uuid": "fd87d06f-8876-11ec-94a3-005056a7484f"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/ff38a34e-8876-11ec-94a3-
005056a7484f?is_constituent=true"
      }
    }
  },
  {
    "uuid": "ffdbbd1f-8876-11ec-94a3-005056a7484f",
    "name": "fg__0004",
    "flexgroup": {
      "uuid": "fd87d06f-8876-11ec-94a3-005056a7484f"
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/ffdbbd1f-8876-11ec-94a3-
005056a7484f?is_constituent=true"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
```

```
    "href": "/api/storage/volumes?flexgroup.uuid=fd87d06f-8876-11ec-94a3-
005056a7484f&is_constituent=true"
  }
}
}
```


Retrieving the efficiency attributes of volume

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/5f098ebc-32c8-11eb-
8dde-005056ace228/?fields=efficiency" -H "accept: application/hal+json"

# The response:
{
"uuid": "5f098ebc-32c8-11eb-8dde-005056ace228",
"name": "vol1",
"efficiency": {
  "compression": "both",
  "dedupe": "background",
  "cross_volume_dedupe": "none",
  "compaction": "none",
  "schedule": "sun-sat@0",
  "svm": "vs0",
  "state": "enabled",
  "status": "idle",
  "type": "regular",
  "progress": "Idle for 00:10:37",
  "last_op_begin_timestamp": "Mon Nov 30 00:00:02 2020",
  "last_op_end_timestamp": "Mon Nov 30 00:00:03 2020",
  "last_op_state": "Success",
  "last_op_size": 0,
  "addr": "/vol/vol1",
  "policy": {
    "name": "-"
  },
  "ratio": 1
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/5f098ebc-32c8-11eb-8dde-005056ace228"
   }
}
}
```

Updating the attributes of a volume

Examples

Updating the attributes of a volume

The PATCH request is used to update the attributes of a volume.

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{ "size": 26214400, "nas": {"security_style":
"mixed"}, "comment": "This is a data volume" }' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Tue, 31 Jul 2018 09:36:43 GMT
Server: libzapid-httpd
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "3c5be5a6-94a5-11e8-8ca3-00505695c11b",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/3c5be5a6-94a5-11e8-8ca3-00505695c11b"
    }
  }
}
}
```

Updating the attributes of a FlexClone using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"clone":{"split_initiated":"true"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 25 Feb 2019 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "8e01747f-38e5-11e9-8a3a-00a09843994b",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8e01747f-38e5-11e9-8a3a-00a09843994b"
    }
  }
}
}
```

Stopping a volume clone split operation on a FlexClone using PATCH.

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"clone":{"split_initiated":"false"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Wed, 03 Nov 2021 15:10:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "1f8b3673-3cb8-11ec-b89e-005056bb2cb5",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/1f8b3673-3cb8-11ec-b89e-005056bb2cb5"
    }
  }
}
}
```

Enabling quotas for a FlexVol or a FlexGroup volume using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"quota":{"enabled":"true"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 25 Feb 2019 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "d2fe7299-57d0-11e9-a2dc-005056a7f717",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/d2fe7299-57d0-11e9-a2dc-005056a7f717"
    }
  }
}
}
```

Disabling quotas for a FlexVol or a FlexGroup volume using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"quota":{"enabled":"false"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 25 Feb 2019 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "0c8f6bea-57d1-11e9-a2dc-005056a7f717",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/0c8f6bea-57d1-11e9-a2dc-005056a7f717"
    }
  }
}
}
```

Starting non-disruptive volume capacity rebalancing for a FlexGroup volume using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"rebalancing":{"state":"starting",
"max_runtime":"PT6H"}}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 25 Feb 2019 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "d2fe7299-57d0-11e9-a2dc-005056a7f717",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/d2fe7299-57d0-11e9-a2dc-005056a7f717"
    }
  }
}
}
```

Starting a scheduled non-disruptive volume capacity rebalancing for a FlexGroup volume using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"rebalancing":{"state":"starting",
"start_time":"2022-12-21T15:30:00-05:00"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 21 Dec 2022 15:25:00 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "53b2a954-80d4-11ed-81d2-005056ac8ed0",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/53b2a954-80d4-11ed-81d2-005056ac8ed0"
    }
  }
}
}
```

Stopping non-disruptive volume capacity rebalancing OR scheduled rebalancing for a FlexGroup volume using PATCH. This works for scheduled or on-going rebalancing.

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"rebalancing":{"state":"stopping"}}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Mon, 25 Feb 2019 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "0c8f6bea-57d1-11e9-a2dc-005056a7f717",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/0c8f6bea-57d1-11e9-a2dc-005056a7f717"
    }
  }
}
}
```

Modifying non-disruptive volume capacity rebalancing configurations for a FlexGroup volume

The following example shows how to use a PATCH request to modify non-disruptive volume capacity rebalancing configurations for a FlexGroup volume:

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"rebalancing":{"start_time":"2023-03-18T15:30:00-
05:00","max_threshold":20, "min_threshold":5, "max_file_moves":15,
"min_file_size":"100MB", "exclude_snapshots":"false",
"max_runtime":"PT6H"}}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Thu, 16 Mar 2023 10:10:19 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "0c8f6bea-57d1-11e9-a2dc-005056a7f717",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/0c8f6bea-57d1-11e9-a2dc-005056a7f717"
    }
  }
}
}
```

Retrieving non-disruptive volume capacity rebalancing engine runtime information for a FlexGroup volume

The following example shows how to use a GET request to retrieve non-disruptive volume capacity rebalancing engine runtime information for a FlexGroup volume:

```
# The API:
/api/storage/volumes?is_constituent=true

# The call:
curl -X GET  "https://<mgmt-
ip>/api/storage/volumes?fields=rebalancing.engine&is_constituent=true&flex
group.uuid=d0c3359c-5448-4a9b-a077-e3295a7e9057" -H "accept:
application/hal+json"

# The response:
```

```
{
"records": [
  {
    "uuid": "2b32fdf1-b916-11ec-b103-005056a79638",
    "name": "fg__0001",
    "flexgroup": {
      "uuid": "2b3323db-b916-11ec-b103-005056a79638"
    },
    "rebalancing": {
      "engine": {
        "scanner": {
          "files_scanned": 3522915,
          "files_skipped": {
            "too_small": 3812,
            "too_large": 199,
            "fast_truncate": 22,
            "in_snapshot": 77499,
            "efficiency_blocks": 1823,
            "efficiency_percent": 355,
            "incompatible": 9377,
            "metadata": 85449,
            "remote_cache": 1912,
            "write_fenced": 28,
            "on_demand_destination": 87,
            "footprint_invalid": 12,
            "other": 336
          },
          "blocks_scanned": 1542675000,
          "blocks_skipped": {
            "too_small": 8744000,
            "too_large": 865000,
            "fast_truncate": 54000,
            "in_snapshot": 7749000,
            "efficiency_blocks": 1472000,
            "efficiency_percent": 366000,
            "incompatible": 2287000,
            "metadata": 85673000,
            "remote_cache": 9914000,
            "write_fenced": 19000,
            "on_demand_destination": 66000,
            "footprint_invalid": 98000,
            "other":187000
          }
        },
        "movement": {
          "file_moves_started": 9833,
```

```
          "most_recent_start_time": "2022-02-15T12:56:07-05:00",
          "last_error": {
            "time": "2022-02-15T09:09:27-05:00",
            "file_id": 88,
            "destination": 1089,
            "code": 60
          }
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/2b32fdf1-b916-11ec-b103-
005056a79638?is_constituent=true"
      }
    }
  },
  {
    "uuid": "2cc5da55-b916-11ec-b103-005056a79638",
    "name": "fg__0002",
    "flexgroup": {
      "uuid": "2b3323db-b916-11ec-b103-005056a79638"
    },
    "rebalancing": {
      "engine": {
        "scanner": {
          "files_scanned": 3522915,
          "files_skipped": {
            "too_small": 3812,
            "too_large": 188,
            "fast_truncate": 25,
            "in_snapshot": 77499,
            "efficiency_blocks": 1823,
            "efficiency_percent": 355,
            "incompatible": 9377,
            "metadata": 85449,
            "remote_cache": 1912,
            "write_fenced": 28,
            "on_demand_destination": 87,
            "footprint_invalid": 12,
            "other": 336
          },
          "blocks_scanned": 1542675000,
          "blocks_skipped": {
            "too_small": 8744000,
            "too_large": 865000,
```

```
            "fast_truncate": 54000,
            "in_snapshot": 7749000,
            "efficiency_blocks": 1472000,
            "efficiency_percent": 366000,
            "incompatible": 2287000,
            "metadata": 85673000,
            "remote_cache": 9914000,
            "write_fenced": 19000,
            "on_demand_destination": 66000,
            "footprint_invalid": 98000,
            "other":187000
          }
        },
        "movement": {
          "file_moves_started": 9833,
          "most_recent_start_time": "2022-02-15T12:56:07-05:00",
          "last_error": {
            "time": "2022-02-15T08:09:27-05:00",
            "file_id": 88,
            "destination": 1089,
            "code": 60
          }
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/2cc5da55-b916-11ec-b103-
005056a79638?is_constituent=true"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href":
"/api/storage/volumes?fields=rebalancing.engine&is_constituent=true&flexgr
oup.uuid=d0c3359c-5448-4a9b-a077-e3295a7e9057"
  }
}
}
```


Add tiering object tags for a FlexVol volume

The following example shows how to use a PATCH request to add tiering object tags for a FlexVol volume:

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"tiering.object_tags": [ "key1=val1", "key2=val2"
]}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Tue, 11 Feb 2020 19:29:25 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "d05012de-4d04-11ea-836b-005056bb6f9d",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/d05012de-4d04-11ea-836b-005056bb6f9d"
    }
  }
}
}
```

Remove tiering object tags for a FlexVol using PATCH

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/d0c3359c-5448-4a9b-
a077-e3295a7e9057" -d '{"tiering.object_tags": []}' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 24 Jan 2020 22:28:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "ca234df1-3ef8-11ea-9a56-005056bb69a1",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/ca234df1-3ef8-11ea-9a56-005056bb69a1"
    }
  }
}
}
```

Deleting a volume

Example

Deleting a volume

The DELETE request is used to delete a volume.

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X DELETE  "https://<mgmt-ip>/api/storage/volumes/{uuid} " -H
"accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
cache-control: no-cache,no-store,must-revalidate
connection: Keep-Alive
content-length: 189
content-type: application/json
date: Wed, 01 Aug 2018 09:40:36 GMT
keep-alive: timeout=5, max=100
server: libzapid-httpd
{
"job": {
  "uuid": "f1aa3eb8-956e-11e8-86bf-0050568e2249",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f1aa3eb8-956e-11e8-86bf-0050568e2249"
    }
  }
}
}
```

Deleting a volume and bypassing the recovery queue

```
# The API:
/api/storage/volumes/{uuid}

# The call:
curl -X DELETE  "https://<mgmt-ip>/api/storage/volumes/{uuid}?force=true"
-H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Wed, 09 Feb 2022 09:59:55 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "08757020-898f-11ec-b367-005056bb7353",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/08757020-898f-11ec-b367-005056bb7353"
    }
  }
}
}
```

Retrieve volumes

GET `/storage/volumes`

Introduced In: 9.6

Retrieves volumes.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `is_svm_root`
- `aggressive_readahead_mode`
- `analytics.by_accessed_time.bytes_used`

- analytics.by_modified_time.bytes_used
- analytics.bytes_used
- analytics.file_count
- analytics.histogram_by_time_labels
- analytics.incomplete_data
- analytics.report_time
- analytics.subdir_count
- analytics.supported
- analytics.unsupported_reason
- anti_ransomware.*
- application.*
- encryption.*
- queue_for_encryption
- convert_unicode
- clone.parent_snapshot.name
- clone.parent_snapshot.uuid
- clone.parent_svm.name
- clone.parent_svm.uuid
- clone.parent_volume.name
- clone.parent_volume.uuid
- clone.split_complete_percent
- clone.split_estimate
- clone.split_initiated
- efficiency.*
- error_state.*
- files.*
- max_dir_size
- nas.export_policy.id
- nas.gid
- nas.path
- nas.security_style
- nas.uid
- nas.unix_permissions
- nas.junction_parent.name

- nas.junction_parent.uuid
- snaplock.*
- restore_to.*
- snapshot_policy.uuid
- quota.*
- qos.*
- flexcache_endpoint_type
- space.block_storage_inactive_user_data
- space.capacity_tier_footprint
- space.performance_tier_footprint
- space.local_tier_footprint
- space.footprint
- space.over_provisioned
- space.metadata
- space.total_footprint
- space.dedupe_metafiles_footprint
- space.dedupe_metafiles_temporary_footprint
- space.delayed_free_footprint
- space.file_operation_metadata
- space.snapmirror_destination_footprint
- space.volume_guarantee_footprint
- space.cross_volume_dedupe_metafiles_footprint
- space.cross_volume_dedupe_metafiles_temporary_footprint
- space.snapshot_reserve_unusable
- space.snapshot_spill
- space.user_data
- space.logical_space.*
- space.snapshot.*
- space.used_by_afs
- space.afs_total
- space.available_percent
- space.full_threshold_percent
- space.nearly_full_threshold_percent
- space.overwrite_reserve

- space.overwrite_reserve_used
- space.size_available_for_snapshots
- space.percent_used
- space.fractional_reserve
- space.block_storage_inactive_user_data_percent
- space.physical_used
- space.physical_used_percent
- space.expected_available
- space.filesystem_size
- space.filesystem_size_fixed
- guarantee.*
- autosize.*
- movement.*
- statistics.*
- constituents.name
- constituents.node.name
- constituents.node.uuid
- constituents.space.size
- constituents.space.available
- constituents.space.used
- constituents.space.available_percent
- constituents.space.used_percent
- constituents.space.block_storage_inactive_user_data
- constituents.space.capacity_tier_footprint
- constituents.space.performance_tier_footprint
- constituents.space.local_tier_footprint
- constituents.space.footprint
- constituents.space.over_provisioned
- constituents.space.metadata
- constituents.space.total_footprint
- constituents.space.logical_space.reporting
- constituents.space.logical_space.enforcement
- constituents.space.logical_space.used_by_afs
- constituents.space.logical_space.available

- constituents.space.snapshot.used
- constituents.space.snapshot.reserve_percent
- constituents.space.snapshot.autodelete_enabled
- constituents.space.large_size_enabled
- constituents.space.max_size
- constituents.space.total_metadata
- constituents.space.total_metadata_footprint
- constituents.aggregates.name
- constituents.aggregates.uuid
- constituents.movement.destination_aggregate.name
- constituents.movement.destination_aggregate.uuid
- constituents.movement.state
- constituents.movement.percent_complete
- constituents.movement.cutover_window
- constituents.movement.tiering_policy
- asynchronous_directory_delete.*
- rebalancing.*
- metric.*
- cloud_write_enabled

Related ONTAP commands

- volume show
- volume clone show
- volume efficiency show
- volume encryption show
- volume flexcache show
- volume flexgroup show
- volume move show
- volume quota show
- volume show-space
- volume snaplock show
- volume rebalance show
- security anti-ransomware volume show
- security anti-ransomware volume space show

- `volume file async-delete client show`

Parameters

Name	Type	In	Required	Description
is_constituent	boolean	query	False	When set to false, only FlexVol and FlexGroup volumes are returned. When set to true, only FlexGroup constituent volumes are returned. Default for GET calls is false. • Default value: • Introduced in: 9.10
asynchronous_directory_delete.enabled	boolean	query	False	Filter by asynchronous_directory_delete.enabled • Introduced in: 9.11
asynchronous_directory_delete.trash_bin	string	query	False	Filter by asynchronous_directory_delete.trash_bin • Introduced in: 9.11
type	string	query	False	Filter by type
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
snapmirror.is_protected	boolean	query	False	Filter by snapmirror.is_protected • Introduced in: 9.7

Name	Type	In	Required	Description
snapmirror.destinations.is_ontap	boolean	query	False	Filter by snapmirror.destinations.is_ontap • Introduced in: 9.9
snapmirror.destinations.is_cloud	boolean	query	False	Filter by snapmirror.destinations.is_cloud • Introduced in: 9.9
guarantee.honored	boolean	query	False	Filter by guarantee.honored
guarantee.type	string	query	False	Filter by guarantee.type
rebalancing.min_file_size	integer	query	False	Filter by rebalancing.min_file_size • Introduced in: 9.11
rebalancing.exclude_snapshots	boolean	query	False	Filter by rebalancing.exclude_snapshots • Introduced in: 9.11
rebalancing.engine.movement.file_moves_started	integer	query	False	Filter by rebalancing.engine.movement.file_moves_started • Introduced in: 9.12
rebalancing.engine.movement.most_recent_start_time	string	query	False	Filter by rebalancing.engine.movement.most_recent_start_time • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.movement.last_error.file_id	integer	query	False	Filter by rebalancing.engine.movement.last_error.file_id • Introduced in: 9.12
rebalancing.engine.movement.last_error.time	string	query	False	Filter by rebalancing.engine.movement.last_error.time • Introduced in: 9.12
rebalancing.engine.movement.last_error.code	integer	query	False	Filter by rebalancing.engine.movement.last_error.code • Introduced in: 9.12
rebalancing.engine.movement.last_error.destination	integer	query	False	Filter by rebalancing.engine.movement.last_error.destination • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.on_demand_destination	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.on_demand_destination • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.efficiency_percent	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.efficiency_percent • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.scanner.blocks_skipped.efficiency_blocks	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.efficiency_blocks • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.remote_cache	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.remote_cache • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.in_snapshot	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.in_snapshot • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.write_fenced	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.write_fenced • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.too_large	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.too_large • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.metadata	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.metadata • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.scanner.blocks_skipped.too_small	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.too_small • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.other	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.other • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.incompatible	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.incompatible • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.fast_truncate	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.fast_truncate • Introduced in: 9.12
rebalancing.engine.scanner.blocks_skipped.footprint_invalid	integer	query	False	Filter by rebalancing.engine.scanner.blocks_skipped.footprint_invalid • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.incompatible	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.incompatible • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.scanner.files_skipped.too_small	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.too_small • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.other	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.other • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.metadata	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.metadata • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.too_large	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.too_large • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.footprint_invalid	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.footprint_invalid • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.fast_truncate	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.fast_truncate • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.scanner.files_skipped.remote_cache	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.remote_cache • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.efficiency_blocks	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.efficiency_blocks • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.efficiency_percent	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.efficiency_percent • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.on_demand_destination	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.on_demand_destination • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.write_fenced	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.write_fenced • Introduced in: 9.12
rebalancing.engine.scanner.files_skipped.in_snapshot	integer	query	False	Filter by rebalancing.engine.scanner.files_skipped.in_snapshot • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.engine.scanner.files_scanned	integer	query	False	Filter by rebalancing.engine.scanner.files_scanned • Introduced in: 9.12
rebalancing.engine.scanner.blocks_scanned	integer	query	False	Filter by rebalancing.engine.scanner.blocks_scanned • Introduced in: 9.12
rebalancing.imbalance_size	integer	query	False	Filter by rebalancing.imbalance_size • Introduced in: 9.11
rebalancing.target_used	integer	query	False	Filter by rebalancing.target_used • Introduced in: 9.11
rebalancing.max_runtime	string	query	False	Filter by rebalancing.max_runtime • Introduced in: 9.11
rebalancing.stop_time	string	query	False	Filter by rebalancing.stop_time • Introduced in: 9.11
rebalancing.state	string	query	False	Filter by rebalancing.state • Introduced in: 9.11

Name	Type	In	Required	Description
rebalancing.start_time	string	query	False	Filter by rebalancing.start_time • Introduced in: 9.11
rebalancing.max_constituent_imbalance_percent	integer	query	False	Filter by rebalancing.max_constituent_imbalance_percent • Introduced in: 9.11
rebalancing.min_threshold	integer	query	False	Filter by rebalancing.min_threshold • Introduced in: 9.11
rebalancing.runtime	string	query	False	Filter by rebalancing.runtime • Introduced in: 9.11
rebalancing.imbalance_percent	integer	query	False	Filter by rebalancing.imbalance_percent • Introduced in: 9.11
rebalancing.notices.code	string	query	False	Filter by rebalancing.notices.code • Introduced in: 9.12
rebalancing.notices.message	string	query	False	Filter by rebalancing.notices.message • Introduced in: 9.12

Name	Type	In	Required	Description
rebalancing.notices.arguments.code	string	query	False	Filter by rebalancing.notices.arguments.code • Introduced in: 9.12
rebalancing.notices.arguments.message	string	query	False	Filter by rebalancing.notices.arguments.message • Introduced in: 9.12
rebalancing.max_threshold	integer	query	False	Filter by rebalancing.max_threshold • Introduced in: 9.11
rebalancing.data_moved	integer	query	False	Filter by rebalancing.data_moved • Introduced in: 9.11
rebalancing.used_for_imbalance	integer	query	False	Filter by rebalancing.used_for_imbalance • Introduced in: 9.12
rebalancing.max_file_moves	integer	query	False	Filter by rebalancing.max_file_moves • Introduced in: 9.11
_tags	string	query	False	Filter by _tags • Introduced in: 9.13

Name	Type	In	Required	Description
msid	integer	query	False	Filter by msid • Introduced in: 9.11
has_dir_index_public	boolean	query	False	Filter by has_dir_index_public • Introduced in: 9.17
state	string	query	False	Filter by state
granular_data_mode	string	query	False	Filter by granular_data_mode • Introduced in: 9.16
uuid	string	query	False	Filter by uuid
flexcache_endpoint_type	string	query	False	Filter by flexcache_endpoint_type
files.inodefile_capacity	integer	query	False	Filter by files.inodefile_capacity • Introduced in: 9.17
files.used	integer	query	False	Filter by files.used
files.maximum	integer	query	False	Filter by files.maximum
flexgroup.uuid	string	query	False	Filter by flexgroup.uuid • Introduced in: 9.10

Name	Type	In	Required	Description
flexgroup.name	string	query	False	Filter by flexgroup.name • Introduced in: 9.10 • maxLength: 203 • minLength: 1
constituents.space.capacity_tier_footprint	integer	query	False	Filter by constituents.space.capacity_tier_footprint • Introduced in: 9.9
constituents.space.footprint	integer	query	False	Filter by constituents.space.footprint • Introduced in: 9.9
constituents.space.total_metadata	integer	query	False	Filter by constituents.space.total_metadata • Introduced in: 9.15
constituents.space.large_size_enabled	boolean	query	False	Filter by constituents.space.large_size_enabled • Introduced in: 9.12
constituents.space.performance_tier_footprint	integer	query	False	Filter by constituents.space.performance_tier_footprint • Introduced in: 9.9

Name	Type	In	Required	Description
constituents.space.available_percent	integer	query	False	Filter by constituents.space.available_percent • Introduced in: 9.9
constituents.space.available	integer	query	False	Filter by constituents.space.available • Introduced in: 9.9
constituents.space.max_size	string	query	False	Filter by constituents.space.max_size • Introduced in: 9.14
constituents.space.total_metadata_footprint	integer	query	False	Filter by constituents.space.total_metadata_footprint • Introduced in: 9.15
constituents.space.total_footprint	integer	query	False	Filter by constituents.space.total_footprint • Introduced in: 9.9
constituents.space.over_provisioned	integer	query	False	Filter by constituents.space.over_provisioned • Introduced in: 9.9

Name	Type	In	Required	Description
constituents.space.logical_space.used_by_afs	integer	query	False	Filter by constituents.space.logical_space.used_by_afs • Introduced in: 9.9
constituents.space.logical_space.reporting	boolean	query	False	Filter by constituents.space.logical_space.reporting • Introduced in: 9.9
constituents.space.logical_space.available	integer	query	False	Filter by constituents.space.logical_space.available • Introduced in: 9.9
constituents.space.logical_space.enforcement	boolean	query	False	Filter by constituents.space.logical_space.enforcement • Introduced in: 9.9
constituents.space.size	integer	query	False	Filter by constituents.space.size • Introduced in: 9.9
constituents.space.metadata	integer	query	False	Filter by constituents.space.metadata • Introduced in: 9.9

Name	Type	In	Required	Description
constituents.space.used_by_afs	integer	query	False	Filter by constituents.space.used_by_afs • Introduced in: 9.9
constituents.space.used	integer	query	False	Filter by constituents.space.used • Introduced in: 9.9
constituents.space.used_percent	integer	query	False	Filter by constituents.space.used_percent • Introduced in: 9.10
constituents.space.local_tier_footprint	integer	query	False	Filter by constituents.space.local_tier_footprint • Introduced in: 9.9
constituents.space.afs_total	integer	query	False	Filter by constituents.space.afs_total • Introduced in: 9.9
constituents.space.snapshot.reserve_percent	integer	query	False	Filter by constituents.space.snapshot.reserve_percent • Introduced in: 9.9
constituents.space.snapshot.used	integer	query	False	Filter by constituents.space.snapshot.used • Introduced in: 9.9

Name	Type	In	Required	Description
constituents.space.block_storage_inactive_user_data	integer	query	False	Filter by constituents.space.block_storage_inactive_user_data • Introduced in: 9.9
constituents.name	string	query	False	Filter by constituents.name • Introduced in: 9.9
constituents.movement.state	string	query	False	Filter by constituents.movement.state • Introduced in: 9.9
constituents.movement.cutover_window	integer	query	False	Filter by constituents.movement.cutover_window • Introduced in: 9.9
constituents.movement.percent_complete	integer	query	False	Filter by constituents.movement.percent_complete • Introduced in: 9.9
constituents.movement.destination_aggregate.uuid	string	query	False	Filter by constituents.movement.destination_aggregate.uuid • Introduced in: 9.9

Name	Type	In	Required	Description
constituents.movement.destination_aggregate.name	string	query	False	Filter by constituents.movement.destination_aggregate.name • Introduced in: 9.9
constituents.aggregates.name	string	query	False	Filter by constituents.aggregates.name • Introduced in: 9.9
constituents.aggregates.uuid	string	query	False	Filter by constituents.aggregates.uuid • Introduced in: 9.9
constituents.node.uuid	string	query	False	Filter by constituents.node.uuid • Introduced in: 9.17
constituents.node.name	string	query	False	Filter by constituents.node.name • Introduced in: 9.17
metric.flexcache.bandwidth_savings	integer	query	False	Filter by metric.flexcache.bandwidth_savings • Introduced in: 9.9
metric.flexcache.cache_miss_percent	integer	query	False	Filter by metric.flexcache.cache_miss_percent • Introduced in: 9.8

Name	Type	In	Required	Description
metric.flexcache.status	string	query	False	Filter by metric.flexcache.status • Introduced in: 9.8
metric.flexcache.timestamp	string	query	False	Filter by metric.flexcache.timestamp • Introduced in: 9.8
metric.flexcache.duration	string	query	False	Filter by metric.flexcache.duration • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp
metric.iops.read	integer	query	False	Filter by metric.iops.read
metric.iops.total	integer	query	False	Filter by metric.iops.total
metric.iops.write	integer	query	False	Filter by metric.iops.write
metric.iops.other	integer	query	False	Filter by metric.iops.other
metric.duration	string	query	False	Filter by metric.duration
metric.latency.read	integer	query	False	Filter by metric.latency.read
metric.latency.total	integer	query	False	Filter by metric.latency.total
metric.latency.write	integer	query	False	Filter by metric.latency.write

Name	Type	In	Required	Description
metric.latency.other	integer	query	False	Filter by metric.latency.other
metric.status	string	query	False	Filter by metric.status
metric.throughput.read	integer	query	False	Filter by metric.throughput.read
metric.throughput.total	integer	query	False	Filter by metric.throughput.total
metric.throughput.write	integer	query	False	Filter by metric.throughput.write
metric.throughput.other	integer	query	False	Filter by metric.throughput.other
metric.cloud.timestamp	string	query	False	Filter by metric.cloud.timestamp • Introduced in: 9.7
metric.cloud.iops.read	integer	query	False	Filter by metric.cloud.iops.read • Introduced in: 9.7
metric.cloud.iops.total	integer	query	False	Filter by metric.cloud.iops.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.cloud.iops.write	integer	query	False	Filter by metric.cloud.iops.write • Introduced in: 9.7
metric.cloud.iops.other	integer	query	False	Filter by metric.cloud.iops.other • Introduced in: 9.7
metric.cloud.duration	string	query	False	Filter by metric.cloud.duration • Introduced in: 9.7
metric.cloud.latency.read	integer	query	False	Filter by metric.cloud.latency.read • Introduced in: 9.7
metric.cloud.latency.total	integer	query	False	Filter by metric.cloud.latency.total • Introduced in: 9.7
metric.cloud.latency.write	integer	query	False	Filter by metric.cloud.latency.write • Introduced in: 9.7
metric.cloud.latency.other	integer	query	False	Filter by metric.cloud.latency.other • Introduced in: 9.7

Name	Type	In	Required	Description
metric.cloud.status	string	query	False	Filter by metric.cloud.status • Introduced in: 9.7
convert_unicode	boolean	query	False	Filter by convert_unicode • Introduced in: 9.10
efficiency.dedupe	string	query	False	Filter by efficiency.dedupe
efficiency.cross_volume_dedupe	string	query	False	Filter by efficiency.cross_volume_dedupe
efficiency.last_op_size	integer	query	False	Filter by efficiency.last_op_size • Introduced in: 9.9
efficiency.policy.name	string	query	False	Filter by efficiency.policy.name • Introduced in: 9.7
efficiency.type	string	query	False	Filter by efficiency.type • Introduced in: 9.9
efficiency.idcs_scanner.operation_state	string	query	False	Filter by efficiency.idcs_scanner.operation_state • Introduced in: 9.13

Name	Type	In	Required	Description
efficiency.idcs_scanner.enabled	boolean	query	False	Filter by efficiency.idcs_scanner.enabled • Introduced in: 9.13
efficiency.idcs_scanner.threshold_inactive_time	string	query	False	Filter by efficiency.idcs_scanner.threshold_inactive_time • Introduced in: 9.13
efficiency.idcs_scanner.status	string	query	False	Filter by efficiency.idcs_scanner.status • Introduced in: 9.13
efficiency.idcs_scanner.mode	string	query	False	Filter by efficiency.idcs_scanner.mode • Introduced in: 9.13
efficiency.logging_enabled	boolean	query	False	Filter by efficiency.logging_enabled • Introduced in: 9.11
efficiency.auto_state	string	query	False	Filter by efficiency.auto_state • Introduced in: 9.12
efficiency.application_io_size	string	query	False	Filter by efficiency.application_io_size • Introduced in: 9.8

Name	Type	In	Required	Description
efficiency.compression	string	query	False	Filter by efficiency.compression
efficiency.op_state	string	query	False	Filter by efficiency.op_state • Introduced in: 9.9
efficiency.volume_path	string	query	False	Filter by efficiency.volume_path • Introduced in: 9.13
efficiency.progress	string	query	False	Filter by efficiency.progress • Introduced in: 9.9
efficiency.last_op_state	string	query	False	Filter by efficiency.last_op_state • Introduced in: 9.9
efficiency.space_savings.total	integer	query	False	Filter by efficiency.space_savings.total • Introduced in: 9.11
efficiency.space_savings.total_percent	integer	query	False	Filter by efficiency.space_savings.total_percent • Introduced in: 9.11

Name	Type	In	Required	Description
efficiency.space_savings.dedupe_percent	integer	query	False	Filter by efficiency.space_savings.dedupe_percent • Introduced in: 9.11
efficiency.space_savings.dedupe	integer	query	False	Filter by efficiency.space_savings.dedupe • Introduced in: 9.11
efficiency.space_savings.dedupe_sharing	integer	query	False	Filter by efficiency.space_savings.dedupe_sharing • Introduced in: 9.11
efficiency.space_savings.compression	integer	query	False	Filter by efficiency.space_savings.compression • Introduced in: 9.11
efficiency.space_savings.compression_percent	integer	query	False	Filter by efficiency.space_savings.compression_percent • Introduced in: 9.11
efficiency.schedule	string	query	False	Filter by efficiency.schedule • Introduced in: 9.8
efficiency.ratio	number	query	False	Filter by efficiency.ratio • Introduced in: 9.17

Name	Type	In	Required	Description
efficiency.storage_efficiency_mode	string	query	False	Filter by efficiency.storage_efficiency_mode • Introduced in: 9.10
efficiency.has_savings	boolean	query	False	Filter by efficiency.has_savings • Introduced in: 9.11
efficiency.scanner.state	string	query	False	Filter by efficiency.scanner.state • Introduced in: 9.11
efficiency.scanner.compression	boolean	query	False	Filter by efficiency.scanner.compression • Introduced in: 9.11
efficiency.scanner.scan_old_data	boolean	query	False	Filter by efficiency.scanner.scan_old_data • Introduced in: 9.11
efficiency.scanner.dedupe	boolean	query	False	Filter by efficiency.scanner.dedupe • Introduced in: 9.11
efficiency.last_op_end	string	query	False	Filter by efficiency.last_op_end • Introduced in: 9.9

Name	Type	In	Required	Description
efficiency.last_op_begin	string	query	False	Filter by efficiency.last_op_begin • Introduced in: 9.9
efficiency.last_op_err	string	query	False	Filter by efficiency.last_op_err • Introduced in: 9.9
efficiency.state	string	query	False	Filter by efficiency.state • Introduced in: 9.9
efficiency.compression_type	string	query	False	Filter by efficiency.compression_type • Introduced in: 9.11
efficiency.compaction	string	query	False	Filter by efficiency.compaction
statistics.cifs_ops_raw.write.volume_protocol_size_histogram_counts	integer	query	False	Filter by statistics.cifs_ops_raw.write.volume_protocol_size_histogram_counts • Introduced in: 9.11
statistics.cifs_ops_raw.write.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.write.total_time • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.write.volume_protocol_latency_histogram_counts	integer	query	False	Filter by statistics.cifs_ops_raw.write.volume_protocol_latency_histogram_counts • Introduced in: 9.11
statistics.cifs_ops_raw.write.volume_protocol_size_histogram_labels	string	query	False	Filter by statistics.cifs_ops_raw.write.volume_protocol_size_histogram_labels • Introduced in: 9.11
statistics.cifs_ops_raw.write.volume_protocol_latency_histogram_labels	string	query	False	Filter by statistics.cifs_ops_raw.write.volume_protocol_latency_histogram_labels • Introduced in: 9.11
statistics.cifs_ops_raw.write.count	integer	query	False	Filter by statistics.cifs_ops_raw.write.count • Introduced in: 9.11
statistics.cifs_ops_raw.readlink.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.readlink.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.readlink.count	integer	query	False	Filter by statistics.cifs_ops_raw.readlink.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.create.symlink.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.create.symlink.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.create.symlink.count	integer	query	False	Filter by statistics.cifs_ops_raw.create.symlink.count • Introduced in: 9.11
statistics.cifs_ops_raw.create.other.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.create.other.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.create.other.count	integer	query	False	Filter by statistics.cifs_ops_raw.create.other.count • Introduced in: 9.11
statistics.cifs_ops_raw.create.dir.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.create.dir.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.create.dir.count	integer	query	False	Filter by statistics.cifs_ops_raw.create.dir.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.create.file.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.create.file.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.create.file.count	integer	query	False	Filter by statistics.cifs_ops_raw.create.file.count • Introduced in: 9.11
statistics.cifs_ops_raw.read.volume_protocol_size_histogram_counts	integer	query	False	Filter by statistics.cifs_ops_raw.read.volume_protocol_size_histogram_counts • Introduced in: 9.11
statistics.cifs_ops_raw.read.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.read.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.read.volume_protocol_latency_histogram_counts	integer	query	False	Filter by statistics.cifs_ops_raw.read.volume_protocol_latency_histogram_counts • Introduced in: 9.11
statistics.cifs_ops_raw.read.volume_protocol_size_histogram_labels	string	query	False	Filter by statistics.cifs_ops_raw.read.volume_protocol_size_histogram_labels • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.read.volume_protocol_latency_histogram_labels	string	query	False	Filter by statistics.cifs_ops_raw.read.volume_protocol_latency_histogram_labels • Introduced in: 9.11
statistics.cifs_ops_raw.read.count	integer	query	False	Filter by statistics.cifs_ops_raw.read.count • Introduced in: 9.11
statistics.cifs_ops_raw.lock.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.lock.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.lock.count	integer	query	False	Filter by statistics.cifs_ops_raw.lock.count • Introduced in: 9.11
statistics.cifs_ops_raw.getattr.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.getattr.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.getattr.count	integer	query	False	Filter by statistics.cifs_ops_raw.getattr.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.watch.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.watch.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.watch.count	integer	query	False	Filter by statistics.cifs_ops_raw.watch.count • Introduced in: 9.11
statistics.cifs_ops_raw.open.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.open.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.open.count	integer	query	False	Filter by statistics.cifs_ops_raw.open.count • Introduced in: 9.11
statistics.cifs_ops_raw.link.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.link.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.link.count	integer	query	False	Filter by statistics.cifs_ops_raw.link.count • Introduced in: 9.11
statistics.cifs_ops_raw.unlink.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.unlink.total_time • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.unlink.count	integer	query	False	Filter by statistics.cifs_ops_raw.unlink.count • Introduced in: 9.11
statistics.cifs_ops_raw.access.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.access.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.access.count	integer	query	False	Filter by statistics.cifs_ops_raw.access.count • Introduced in: 9.11
statistics.cifs_ops_raw.readdir.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.readdir.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.readdir.count	integer	query	False	Filter by statistics.cifs_ops_raw.readdir.count • Introduced in: 9.11
statistics.cifs_ops_raw.audit.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.audit.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.audit.count	integer	query	False	Filter by statistics.cifs_ops_raw.audit.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.cifs_ops_raw.setattr.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.setattr.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.setattr.count	integer	query	False	Filter by statistics.cifs_ops_raw.setattr.count • Introduced in: 9.11
statistics.cifs_ops_raw.rename.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.rename.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.rename.count	integer	query	False	Filter by statistics.cifs_ops_raw.rename.count • Introduced in: 9.11
statistics.cifs_ops_raw.lookup.total_time	integer	query	False	Filter by statistics.cifs_ops_raw.lookup.total_time • Introduced in: 9.11
statistics.cifs_ops_raw.lookup.count	integer	query	False	Filter by statistics.cifs_ops_raw.lookup.count • Introduced in: 9.11
statistics.status	string	query	False	Filter by statistics.status
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read

Name	Type	In	Required	Description
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write
statistics.throughput_raw.other	integer	query	False	Filter by statistics.throughput_raw.other
statistics.cloud.timestamp	string	query	False	Filter by statistics.cloud.timestamp • Introduced in: 9.7
statistics.cloud.latency_raw.read	integer	query	False	Filter by statistics.cloud.latency_raw.read • Introduced in: 9.7
statistics.cloud.latency_raw.total	integer	query	False	Filter by statistics.cloud.latency_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.cloud.latency_raw.write	integer	query	False	Filter by statistics.cloud.latency_raw.write • Introduced in: 9.7
statistics.cloud.latency_raw.other	integer	query	False	Filter by statistics.cloud.latency_raw.other • Introduced in: 9.7
statistics.cloud.iops_raw.read	integer	query	False	Filter by statistics.cloud.iops_raw.read • Introduced in: 9.7
statistics.cloud.iops_raw.total	integer	query	False	Filter by statistics.cloud.iops_raw.total • Introduced in: 9.7
statistics.cloud.iops_raw.write	integer	query	False	Filter by statistics.cloud.iops_raw.write • Introduced in: 9.7
statistics.cloud.iops_raw.other	integer	query	False	Filter by statistics.cloud.iops_raw.other • Introduced in: 9.7
statistics.cloud.status	string	query	False	Filter by statistics.cloud.status • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other
statistics.timestamp	string	query	False	Filter by statistics.timestamp
statistics.flexcache_raw.timestamp	string	query	False	Filter by statistics.flexcache_raw.timestamp • Introduced in: 9.8
statistics.flexcache_raw.client_requested_blocks	integer	query	False	Filter by statistics.flexcache_raw.client_requested_blocks • Introduced in: 9.8
statistics.flexcache_raw.cache_miss_blocks	integer	query	False	Filter by statistics.flexcache_raw.cache_miss_blocks • Introduced in: 9.8
statistics.flexcache_raw.status	string	query	False	Filter by statistics.flexcache_raw.status • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.nfs_ops_raw.write.volume_protocol_size_histogram_counts	integer	query	False	Filter by statistics.nfs_ops_raw.write.volume_protocol_size_histogram_counts • Introduced in: 9.11
statistics.nfs_ops_raw.write.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.write.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.write.volume_protocol_latency_histogram_counts	integer	query	False	Filter by statistics.nfs_ops_raw.write.volume_protocol_latency_histogram_counts • Introduced in: 9.11
statistics.nfs_ops_raw.write.volume_protocol_size_histogram_labels	string	query	False	Filter by statistics.nfs_ops_raw.write.volume_protocol_size_histogram_labels • Introduced in: 9.11
statistics.nfs_ops_raw.write.volume_protocol_latency_histogram_labels	string	query	False	Filter by statistics.nfs_ops_raw.write.volume_protocol_latency_histogram_labels • Introduced in: 9.11
statistics.nfs_ops_raw.write.count	integer	query	False	Filter by statistics.nfs_ops_raw.write.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.readlink.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.readlink.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.readlink.count	integer	query	False	Filter by statistics.nfs_ops_raw.readlink.count • Introduced in: 9.11
statistics.nfs_ops_raw.create.symlink.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.create.symlink.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.create.symlink.count	integer	query	False	Filter by statistics.nfs_ops_raw.create.symlink.count • Introduced in: 9.11
statistics.nfs_ops_raw.create.other.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.create.other.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.create.other.count	integer	query	False	Filter by statistics.nfs_ops_raw.create.other.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.create.dir.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.create.dir.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.create.dir.count	integer	query	False	Filter by statistics.nfs_ops_raw.create.dir.count • Introduced in: 9.11
statistics.nfs_ops_raw.create.file.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.create.file.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.create.file.count	integer	query	False	Filter by statistics.nfs_ops_raw.create.file.count • Introduced in: 9.11
statistics.nfs_ops_raw.read.volume_protocol_size_histogram_counts	integer	query	False	Filter by statistics.nfs_ops_raw.read.volume_protocol_size_histogram_counts • Introduced in: 9.11
statistics.nfs_ops_raw.read.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.read.total_time • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.read.volume_protocol_latency_histogram_counts	integer	query	False	Filter by statistics.nfs_ops_raw.read.volume_protocol_latency_histogram_counts • Introduced in: 9.11
statistics.nfs_ops_raw.read.volume_protocol_size_histogram_labels	string	query	False	Filter by statistics.nfs_ops_raw.read.volume_protocol_size_histogram_labels • Introduced in: 9.11
statistics.nfs_ops_raw.read.volume_protocol_latency_histogram_labels	string	query	False	Filter by statistics.nfs_ops_raw.read.volume_protocol_latency_histogram_labels • Introduced in: 9.11
statistics.nfs_ops_raw.read.count	integer	query	False	Filter by statistics.nfs_ops_raw.read.count • Introduced in: 9.11
statistics.nfs_ops_raw.lock.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.lock.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.lock.count	integer	query	False	Filter by statistics.nfs_ops_raw.lock.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.getattr.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.getattr.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.getattr.count	integer	query	False	Filter by statistics.nfs_ops_raw.getattr.count • Introduced in: 9.11
statistics.nfs_ops_raw.watch.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.watch.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.watch.count	integer	query	False	Filter by statistics.nfs_ops_raw.watch.count • Introduced in: 9.11
statistics.nfs_ops_raw.open.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.open.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.open.count	integer	query	False	Filter by statistics.nfs_ops_raw.open.count • Introduced in: 9.11
statistics.nfs_ops_raw.link.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.link.total_time • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.link.count	integer	query	False	Filter by statistics.nfs_ops_raw.link.count • Introduced in: 9.11
statistics.nfs_ops_raw.unlink.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.unlink.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.unlink.count	integer	query	False	Filter by statistics.nfs_ops_raw.unlink.count • Introduced in: 9.11
statistics.nfs_ops_raw.access.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.access.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.access.count	integer	query	False	Filter by statistics.nfs_ops_raw.access.count • Introduced in: 9.11
statistics.nfs_ops_raw.readdir.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.readdir.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.readdir.count	integer	query	False	Filter by statistics.nfs_ops_raw.readdir.count • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.audit.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.audit.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.audit.count	integer	query	False	Filter by statistics.nfs_ops_raw.audit.count • Introduced in: 9.11
statistics.nfs_ops_raw.setattr.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.setattr.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.setattr.count	integer	query	False	Filter by statistics.nfs_ops_raw.setattr.count • Introduced in: 9.11
statistics.nfs_ops_raw.rename.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.rename.total_time • Introduced in: 9.11
statistics.nfs_ops_raw.rename.count	integer	query	False	Filter by statistics.nfs_ops_raw.rename.count • Introduced in: 9.11
statistics.nfs_ops_raw.lookup.total_time	integer	query	False	Filter by statistics.nfs_ops_raw.lookup.total_time • Introduced in: 9.11

Name	Type	In	Required	Description
statistics.nfs_ops_raw.lookup.count	integer	query	False	Filter by statistics.nfs_ops_raw.lookup.count • Introduced in: 9.11
aggressive_readahead_mode	string	query	False	Filter by aggressive_readahead_mode • Introduced in: 9.13
consistency_group.uuid	string	query	False	Filter by consistency_group.uuid • Introduced in: 9.10
consistency_group.name	string	query	False	Filter by consistency_group.name • Introduced in: 9.7
access_time_enabled	boolean	query	False	Filter by access_time_enabled • Introduced in: 9.8
anti_ransomware.block_device_detection_start_time	string	query	False	Filter by anti_ransomware.block_device_detection_start_time • Introduced in: 9.17
anti_ransomware.attack_probability	string	query	False	Filter by anti_ransomware.attack_probability • Introduced in: 9.10

Name	Type	In	Required	Description
anti_ransomware.typical_usage.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.typical_usage.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.typical_usage.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.typical_usage.file_create_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.typical_usage.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.typical_usage.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.typical_usage.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.typical_usage.high_entropy_data_write_peak_percent • Introduced in: 9.16
anti_ransomware.typical_usage.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.typical_usage.file_delete_peak_rate_per_minute • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.attack_detection_parameters.block_device_auto_learned_encryption_threshold	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.block_device_auto_learned_encryption_threshold • Introduced in: 9.17
anti_ransomware.attack_detection_parameters.based_on_file_delete_op_rate	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.based_on_file_delete_op_rate • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.never_seen_before_file_extension_duration_in_hours	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.never_seen_before_file_extension_duration_in_hours • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.high_entropy_data_surge_notify_percent	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.high_entropy_data_surge_notify_percent • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.relaxing_popular_file_extensions	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.relaxing_popular_file_extensions • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.attack_detection_parameters.based_on_file_rename_op_rate	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.based_on_file_rename_op_rate • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.never_seen_before_file_extension_count_notify_threshold	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.never_seen_before_file_extension_count_notify_threshold • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.file_create_op_rate_surge_notify_percent	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.file_create_op_rate_surge_notify_percent • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.based_on_file_create_op_rate	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.based_on_file_create_op_rate • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.based_on_never_seen_before_file_extension	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.based_on_never_seen_before_file_extension • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.attack_detection_parameters.file_delete_op_rate_surge_notify_percent	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.file_delete_op_rate_surge_notify_percent • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.file_rename_op_rate_surge_notify_percent	integer	query	False	Filter by anti_ransomware.attack_detection_parameters.file_rename_op_rate_surge_notify_percent • Introduced in: 9.16
anti_ransomware.attack_detection_parameters.based_on_high_entropy_data_rate	boolean	query	False	Filter by anti_ransomware.attack_detection_parameters.based_on_high_entropy_data_rate • Introduced in: 9.16
anti_ransomware.attack_detected_by	string	query	False	Filter by anti_ransomware.attack_detected_by • Introduced in: 9.17
anti_ransomware.update_baseline_from_surge	boolean	query	False	Filter by anti_ransomware.update_baseline_from_surge • Introduced in: 9.15

Name	Type	In	Required	Description
anti_ransomware.dry_run_start_time	string	query	False	Filter by anti_ransomware.dry_run_start_time • Introduced in: 9.10
anti_ransomware.attack_reports.time	string	query	False	Filter by anti_ransomware.attack_reports.time • Introduced in: 9.10
anti_ransomware.suspect_files.count	integer	query	False	Filter by anti_ransomware.suspect_files.count • Introduced in: 9.10
anti_ransomware.suspect_files.entropy	string	query	False	Filter by anti_ransomware.suspect_files.entropy • Introduced in: 9.11
anti_ransomware.suspect_files.format	string	query	False	Filter by anti_ransomware.suspect_files.format • Introduced in: 9.10
anti_ransomware.state	string	query	False	Filter by anti_ransomware.state • Introduced in: 9.10

Name	Type	In	Required	Description
anti_ransomware.event_log.is_enabled_on_new_file_extension_seen	boolean	query	False	Filter by anti_ransomware.event_log.is_enabled_on_new_file_extension_seen • Introduced in: 9.14
anti_ransomware.event_log.is_enabled_on_snapshot_copy_creation	boolean	query	False	Filter by anti_ransomware.event_log.is_enabled_on_snapshot_copy_creation • Introduced in: 9.14
anti_ransomware.block_device_detection_state	string	query	False	Filter by anti_ransomware.block_device_detection_state • Introduced in: 9.17
anti_ransomware.space.snapshot_count	integer	query	False	Filter by anti_ransomware.space.snapshot_count • Introduced in: 9.10
anti_ransomware.space.used	integer	query	False	Filter by anti_ransomware.space.used • Introduced in: 9.10
anti_ransomware.space.used_by_snapshots	integer	query	False	Filter by anti_ransomware.space.used_by_snapshots • Introduced in: 9.10

Name	Type	In	Required	Description
anti_ransomware.space.used_by_logs	integer	query	False	Filter by anti_ransomware.space.used_by_logs • Introduced in: 9.10
anti_ransomware.surge_as_normal	boolean	query	False	Filter by anti_ransomware.surge_as_normal • Introduced in: 9.11
anti_ransomware.surge_usage.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.surge_usage.file_delete_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.surge_usage.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.surge_usage.high_entropy_data_write_peak_percent • Introduced in: 9.16
anti_ransomware.surge_usage.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.surge_usage.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.surge_usage.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.surge_usage.file_create_peak_rate_per_minute • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.surge_usage.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.surge_usage.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.surge_usage.time	string	query	False	Filter by anti_ransomware.surge_usage.time • Introduced in: 9.16
anti_ransomware.workload.file_extensions_observed	string	query	False	Filter by anti_ransomware.workload.file_extensions_observed • Introduced in: 9.16
anti_ransomware.workload.surge_statistics.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_statistics.file_delete_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_statistics.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.workload.surge_statistics.high_entropy_data_write_peak_percent • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.workload.surge_statistics.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_statistics.file_create_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_statistics.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_statistics.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_statistics.time	string	query	False	Filter by anti_ransomware.workload.surge_statistics.time • Introduced in: 9.16
anti_ransomware.workload.surge_statistics.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_statistics.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.workload.historical_statistics.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.workload.historical_statistics.high_entropy_data_write_peak_percent • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.workload.historical_statistics.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.historical_statistics.file_delete_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.historical_statistics.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.workload.historical_statistics.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.workload.historical_statistics.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.historical_statistics.file_create_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.historical_statistics.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.historical_statistics.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.newly_observed_file_extensions.count	integer	query	False	Filter by anti_ransomware.workload.newly_observed_file_extensions.count • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.workload.newly_observed_file_extensions.name	string	query	False	Filter by anti_ransomware.workload.newly_observed_file_extensions.name • Introduced in: 9.16
anti_ransomware.workload.typical_usage.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.typical_usage.file_delete_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.typical_usage.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.workload.typical_usage.high_entropy_data_write_peak_percent • Introduced in: 9.16
anti_ransomware.workload.typical_usage.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.typical_usage.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.typical_usage.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.typical_usage.file_create_peak_rate_per_minute • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.workload.typical_usage.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.workload.typical_usage.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.workload.file_extension_types_count	integer	query	False	Filter by anti_ransomware.workload.file_extension_types_count • Introduced in: 9.16
anti_ransomware.workload.surge_usage.file_delete_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_usage.file_delete_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_usage.high_entropy_data_write_peak_percent	integer	query	False	Filter by anti_ransomware.workload.surge_usage.high_entropy_data_write_peak_percent • Introduced in: 9.16
anti_ransomware.workload.surge_usage.file_create_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_usage.file_create_peak_rate_per_minute • Introduced in: 9.16

Name	Type	In	Required	Description
anti_ransomware.workload.surge_usage.file_rename_peak_rate_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_usage.file_rename_peak_rate_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_usage.time	string	query	False	Filter by anti_ransomware.workload.surge_usage.time • Introduced in: 9.16
anti_ransomware.workload.surge_usage.high_entropy_data_write_peak_rate_kb_per_minute	integer	query	False	Filter by anti_ransomware.workload.surge_usage.high_entropy_data_write_peak_rate_kb_per_minute • Introduced in: 9.16
anti_ransomware.workload.surge_usage.newly_observed_file_extensions.count	integer	query	False	Filter by anti_ransomware.workload.surge_usage.newly_observed_file_extensions.count • Introduced in: 9.16
anti_ransomware.workload.surge_usage.newly_observed_file_extensions.name	string	query	False	Filter by anti_ransomware.workload.surge_usage.newly_observed_file_extensions.name • Introduced in: 9.16
qos.policy.uuid	string	query	False	Filter by qos.policy.uuid

Name	Type	In	Required	Description
qos.policy.min_throughput_iops	integer	query	False	Filter by qos.policy.min_throughput_iops • Max value: 2147483647 • Min value: 0
qos.policy.min_throughput_mbps	integer	query	False	Filter by qos.policy.min_throughput_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
qos.policy.max_throughput	string	query	False	Filter by qos.policy.max_throughput • Introduced in: 9.17
qos.policy.min_throughput	string	query	False	Filter by qos.policy.min_throughput • Introduced in: 9.17
qos.policy.max_throughput_iops	integer	query	False	Filter by qos.policy.max_throughput_iops • Max value: 2147483647 • Min value: 0
qos.policy.max_throughput_mbps	integer	query	False	Filter by qos.policy.max_throughput_mbps • Max value: 4194303 • Min value: 0

Name	Type	In	Required	Description
qos.policy.name	string	query	False	Filter by qos.policy.name
activity_tracking.state	string	query	False	Filter by activity_tracking.state • Introduced in: 9.10
activity_tracking.supported	boolean	query	False	Filter by activity_tracking.supported • Introduced in: 9.10
activity_tracking.unsupported_reason.message	string	query	False	Filter by activity_tracking.unsupported_reason.message • Introduced in: 9.10
activity_tracking.unsupported_reason.code	string	query	False	Filter by activity_tracking.unsupported_reason.code • Introduced in: 9.10
validate_only	boolean	query	False	Filter by validate_only • Introduced in: 9.14
application.name	string	query	False	Filter by application.name
application.uuid	string	query	False	Filter by application.uuid

Name	Type	In	Required	Description
space.total_footprint	integer	query	False	Filter by space.total_footprint • Introduced in: 9.8
space.over_provisioned	integer	query	False	Filter by space.over_provisioned
space.nearly_full_threshold_percent	integer	query	False	Filter by space.nearly_full_threshold_percent • Introduced in: 9.9
space.large_size_enabled	boolean	query	False	Filter by space.large_size_enabled • Introduced in: 9.12
space.dedupe_metafiles_temporary_footprint	integer	query	False	Filter by space.dedupe_metafiles_temporary_footprint • Introduced in: 9.10
space.physical_used	integer	query	False	Filter by space.physical_used • Introduced in: 9.10
space.filesystem_size	integer	query	False	Filter by space.filesystem_size • Introduced in: 9.10

Name	Type	In	Required	Description
space.delayed_free_footprint	integer	query	False	Filter by space.delayed_free_footprint • Introduced in: 9.10
space.block_storage_inactive_user_data	integer	query	False	Filter by space.block_storage_inactive_user_data
space.volume_guarantee_footprint	integer	query	False	Filter by space.volume_guarantee_footprint • Introduced in: 9.10
space.cross_volume_dedupe_metafiles_footprint	integer	query	False	Filter by space.cross_volume_dedupe_metafiles_footprint • Introduced in: 9.10
space.fractional_reserve	integer	query	False	Filter by space.fractional_reserve • Introduced in: 9.9
space.filesystem_size_fixed	boolean	query	False	Filter by space.filesystem_size_fixed • Introduced in: 9.10
space.cross_volume_dedupe_metafiles_temporary_footprint	integer	query	False	Filter by space.cross_volume_dedupe_metafiles_temporary_footprint • Introduced in: 9.10

Name	Type	In	Required	Description
space.file_operation_metadata	integer	query	False	Filter by space.file_operation_metadata • Introduced in: 9.10
space.is_used_stale	boolean	query	False	Filter by space.is_used_stale • Introduced in: 9.12
space.snapmirror_destination_footprint	integer	query	False	Filter by space.snapmirror_destination_footprint • Introduced in: 9.10
space.snapshot_reserve_unusable	integer	query	False	Filter by space.snapshot_reserve_unusable • Introduced in: 9.10
space.local_tier_footprint	integer	query	False	Filter by space.local_tier_footprint • Introduced in: 9.8
space.block_storage_inactive_user_data_percent	integer	query	False	Filter by space.block_storage_inactive_user_data_percent • Introduced in: 9.9
space.logical_space.available	integer	query	False	Filter by space.logical_space.available
space.logical_space.used_by_afs	integer	query	False	Filter by space.logical_space.used_by_afs

Name	Type	In	Required	Description
space.logical_space.reporting	boolean	query	False	Filter by space.logical_space.reporting
space.logical_space.used_by_snapshots	integer	query	False	Filter by space.logical_space.used_by_snapshots • Introduced in: 9.10
space.logical_space.used_percent	integer	query	False	Filter by space.logical_space.used_percent • Introduced in: 9.9
space.logical_space.enforcement	boolean	query	False	Filter by space.logical_space.enforcement
space.logical_space.used	integer	query	False	Filter by space.logical_space.used • Introduced in: 9.9
space.max_size	string	query	False	Filter by space.max_size • Introduced in: 9.14
space.total_metadata_footprint	integer	query	False	Filter by space.total_metadata_footprint • Introduced in: 9.15
space.percent_used	integer	query	False	Filter by space.percent_used • Introduced in: 9.9

Name	Type	In	Required	Description
space.performance_tier_footprint	integer	query	False	Filter by space.performance_tier_footprint • Introduced in: 9.8
space.available	integer	query	False	Filter by space.available
space.available_percent	integer	query	False	Filter by space.available_percent • Introduced in: 9.9
space.footprint	integer	query	False	Filter by space.footprint
space.total_metadata	integer	query	False	Filter by space.total_metadata • Introduced in: 9.15
space.expected_available	integer	query	False	Filter by space.expected_available • Introduced in: 9.10
space.size_available_for_snapshots	integer	query	False	Filter by space.size_available_for_snapshots • Introduced in: 9.9
space.auto_adaptive_compression_footprint_data_reduction	integer	query	False	Filter by space.auto_adaptive_compression_footprint_data_reduction • Introduced in: 9.11

Name	Type	In	Required	Description
space.capacity_tier_footprint	integer	query	False	Filter by space.capacity_tier_footprint
space.dedupe_metafiles_footprint	integer	query	False	Filter by space.dedupe_metafiles_footprint • Introduced in: 9.10
space.overwrite_reserve_used	integer	query	False	Filter by space.overwrite_reserve_used • Introduced in: 9.9
space.physical_used_percent	integer	query	False	Filter by space.physical_used_percent • Introduced in: 9.10
space.capacity_tier_footprint_data_reduction	integer	query	False	Filter by space.capacity_tier_footprint_data_reduction • Introduced in: 9.13
space.full_threshold_percent	integer	query	False	Filter by space.full_threshold_percent • Introduced in: 9.9
space.overwrite_reserve	integer	query	False	Filter by space.overwrite_reserve • Introduced in: 9.9

Name	Type	In	Required	Description
space.user_data	integer	query	False	Filter by space.user_data • Introduced in: 9.10
space.used	integer	query	False	Filter by space.used
space.effective_total_footprint	integer	query	False	Filter by space.effective_total_footprint • Introduced in: 9.11
space.afs_total	integer	query	False	Filter by space.afs_total • Introduced in: 9.9
space.snapshot.reserve_percent	integer	query	False	Filter by space.snapshot.reserve_percent
space.snapshot.reserve_size	integer	query	False	Filter by space.snapshot.reserve_size • Introduced in: 9.9
space.snapshot.autodelete_trigger	string	query	False	Filter by space.snapshot.autodelete_trigger • Introduced in: 9.10
space.snapshot.used	integer	query	False	Filter by space.snapshot.used
space.snapshot.space_used_percent	integer	query	False	Filter by space.snapshot.space_used_percent • Introduced in: 9.9

Name	Type	In	Required	Description
space.snapshot.reserve_available	integer	query	False	Filter by space.snapshot.reserve_available • Introduced in: 9.10
space.snapshot.autodelete.trigger	string	query	False	Filter by space.snapshot.autodelete.trigger • Introduced in: 9.13
space.snapshot.autodelete.target_free_space	integer	query	False	Filter by space.snapshot.autodelete.target_free_space • Introduced in: 9.13
space.snapshot.autodelete.delete_order	string	query	False	Filter by space.snapshot.autodelete.delete_order • Introduced in: 9.13
space.snapshot.autodelete.commitment	string	query	False	Filter by space.snapshot.autodelete.commitment • Introduced in: 9.13
space.snapshot.autodelete.prefix	string	query	False	Filter by space.snapshot.autodelete.prefix • Introduced in: 9.13
space.snapshot.autodelete.defer_delete	string	query	False	Filter by space.snapshot.autodelete.defer_delete • Introduced in: 9.13

Name	Type	In	Required	Description
space.snapshot_spill	integer	query	False	Filter by space.snapshot_spill • Introduced in: 9.10
space.compaction_footprint_data_reduction	integer	query	False	Filter by space.compaction_footprint_data_reduction • Introduced in: 9.13
space.size	integer	query	False	Filter by space.size
space.metadata	integer	query	False	Filter by space.metadata
space.used_by_afs	integer	query	False	Filter by space.used_by_afs • Introduced in: 9.9
queue_for_encryption	boolean	query	False	Filter by queue_for_encryption • Introduced in: 9.8
snapshot_count	integer	query	False	Filter by snapshot_count • Introduced in: 9.10 • Max value: 1023 • Min value: 0
nas.export_policy.id	integer	query	False	Filter by nas.export_policy.id
nas.export_policy.name	string	query	False	Filter by nas.export_policy.name

Name	Type	In	Required	Description
nas.uid	integer	query	False	Filter by nas.uid
nas.unix_permissions	integer	query	False	Filter by nas.unix_permissions
nas.path	string	query	False	Filter by nas.path
nas.gid	integer	query	False	Filter by nas.gid
nas.security_style	string	query	False	Filter by nas.security_style
nas.junction_parent.uuid	string	query	False	Filter by nas.junction_parent.uuid • Introduced in: 9.9
nas.junction_parent.name	string	query	False	Filter by nas.junction_parent.name • Introduced in: 9.9
is_dir_index_transfer_enabled	boolean	query	False	Filter by is_dir_index_transfer_enabled • Introduced in: 9.17
aggregates.uuid	string	query	False	Filter by aggregates.uuid
aggregates.name	string	query	False	Filter by aggregates.name
flash_pool.cache_retention_priority	string	query	False	Filter by flash_pool.cache_retention_priority • Introduced in: 9.10

Name	Type	In	Required	Description
flash_pool.caching_policy	string	query	False	Filter by flash_pool.caching_policy • Introduced in: 9.10
flash_pool.cache_eligibility	string	query	False	Filter by flash_pool.cache_eligibility • Introduced in: 9.10
snapshot_locking_enabled	boolean	query	False	Filter by snapshot_locking_enabled • Introduced in: 9.12
name	string	query	False	Filter by name • maxLength: 203 • minLength: 1
scheduled_snapshot_naming_scheme	string	query	False	Filter by scheduled_snapshot_naming_scheme • Introduced in: 9.10
language	string	query	False	Filter by language
snaplock.privileged_delete	string	query	False	Filter by snaplock.privileged_delete
snaplock.type	string	query	False	Filter by snaplock.type
snaplock.retention.default	string	query	False	Filter by snaplock.retention.default

Name	Type	In	Required	Description
snaplock.retention.minimum	string	query	False	Filter by snaplock.retention.minimum
snaplock.retention.maximum	string	query	False	Filter by snaplock.retention.maximum
snaplock.unspecified_retention_file_count	integer	query	False	Filter by snaplock.unspecified_retention_file_count • Introduced in: 9.8
snaplock.autocommit_period	string	query	False	Filter by snaplock.autocommit_period
snaplock.is_audit_log	boolean	query	False	Filter by snaplock.is_audit_log
snaplock.expiry_time	string	query	False	Filter by snaplock.expiry_time
snaplock.litigation_count	integer	query	False	Filter by snaplock.litigation_count
snaplock.compliance_clock_time	string	query	False	Filter by snaplock.compliance_clock_time
snaplock.append_mode_enabled	boolean	query	False	Filter by snaplock.append_mode_enabled
encryption.action	string	query	False	Filter by encryption.action • Introduced in: 9.14

Name	Type	In	Required	Description
encryption.status.code	string	query	False	Filter by encryption.status.code
encryption.status.message	string	query	False	Filter by encryption.status.message
encryption.key_create_time	string	query	False	Filter by encryption.key_create_time • Introduced in: 9.11
encryption.key_id	string	query	False	Filter by encryption.key_id
encryption.rekey	boolean	query	False	Filter by encryption.rekey
encryption.enabled	boolean	query	False	Filter by encryption.enabled
encryption.type	string	query	False	Filter by encryption.type
encryption.state	string	query	False	Filter by encryption.state
movement.percent_complete	integer	query	False	Filter by movement.percent_complete
movement.destination_aggregate.uuid	string	query	False	Filter by movement.destination_aggregate.uuid
movement.destination_aggregate.name	string	query	False	Filter by movement.destination_aggregate.name
movement.state	string	query	False	Filter by movement.state

Name	Type	In	Required	Description
movement.start_time	string	query	False	Filter by movement.start_time • Introduced in: 9.9
movement.cutover_window	integer	query	False	Filter by movement.cutover_window
max_dir_size	integer	query	False	Filter by max_dir_size • Introduced in: 9.10
snapshot_directory_access_enabled	boolean	query	False	Filter by snapshot_directory_access_enabled • Introduced in: 9.13
clone.split_complete_percent	integer	query	False	Filter by clone.split_complete_percent
clone.parent_volume.uuid	string	query	False	Filter by clone.parent_volume.uuid
clone.parent_volume.name	string	query	False	Filter by clone.parent_volume.name
clone.is_flexclone	boolean	query	False	Filter by clone.is_flexclone
clone.parent_snapshot.name	string	query	False	Filter by clone.parent_snapshot.name
clone.parent_snapshot.uuid	string	query	False	Filter by clone.parent_snapshot.uuid

Name	Type	In	Required	Description
clone.inherited_physical_used	integer	query	False	Filter by clone.inherited_physical_used • Introduced in: 9.12
clone.inherited_savings	integer	query	False	Filter by clone.inherited_savings • Introduced in: 9.12
clone.parent_svm.name	string	query	False	Filter by clone.parent_svm.name
clone.parent_svm.uuid	string	query	False	Filter by clone.parent_svm.uuid
clone.split_initiated	boolean	query	False	Filter by clone.split_initiated
clone.split_estimate	integer	query	False	Filter by clone.split_estimate
clone.has_flexclone	boolean	query	False	Filter by clone.has_flexclone • Introduced in: 9.16
status	string	query	False	Filter by status • Introduced in: 9.9
autosize.grow_threshold	integer	query	False	Filter by autosize.grow_threshold
autosize.mode	string	query	False	Filter by autosize.mode

Name	Type	In	Required	Description
autosize.shrink_threshold	integer	query	False	Filter by autosize.shrink_threshold
autosize.maximum	integer	query	False	Filter by autosize.maximum
autosize.minimum	integer	query	False	Filter by autosize.minimum
analytics.by_accessed_time.bytes_used.labels	string	query	False	Filter by analytics.by_accessed_time.bytes_used.labels • Introduced in: 9.17
analytics.by_accessed_time.bytes_used.oldest_label	string	query	False	Filter by analytics.by_accessed_time.bytes_used.oldest_label • Introduced in: 9.17
analytics.by_accessed_time.bytes_used.aged_data_metric	number	query	False	Filter by analytics.by_accessed_time.bytes_used.aged_data_metric • Introduced in: 9.17
analytics.by_accessed_time.bytes_used.values	integer	query	False	Filter by analytics.by_accessed_time.bytes_used.values • Introduced in: 9.17
analytics.by_accessed_time.bytes_used.percentages	number	query	False	Filter by analytics.by_accessed_time.bytes_used.percentages • Introduced in: 9.17

Name	Type	In	Required	Description
analytics.by_accessed_time.bytes_used.newest_label	string	query	False	Filter by analytics.by_accessed_time.bytes_used.newest_label • Introduced in: 9.17
analytics.initialization.state	string	query	False	Filter by analytics.initialization.state • Introduced in: 9.12
analytics.file_count	integer	query	False	Filter by analytics.file_count • Introduced in: 9.17
analytics.incomplete_data	boolean	query	False	Filter by analytics.incomplete_data • Introduced in: 9.17
analytics.by_modified_time.bytes_used.labels	string	query	False	Filter by analytics.by_modified_time.bytes_used.labels • Introduced in: 9.17
analytics.by_modified_time.bytes_used.oldest_label	string	query	False	Filter by analytics.by_modified_time.bytes_used.oldest_label • Introduced in: 9.17

Name	Type	In	Required	Description
analytics.by_modified_time.bytes_used.aged_data_metric	number	query	False	Filter by analytics.by_modified_time.bytes_used.aged_data_metric • Introduced in: 9.17
analytics.by_modified_time.bytes_used.values	integer	query	False	Filter by analytics.by_modified_time.bytes_used.values • Introduced in: 9.17
analytics.by_modified_time.bytes_used.percentages	number	query	False	Filter by analytics.by_modified_time.bytes_used.percentages • Introduced in: 9.17
analytics.by_modified_time.bytes_used.newest_label	string	query	False	Filter by analytics.by_modified_time.bytes_used.newest_label • Introduced in: 9.17
analytics.files_scanned	integer	query	False	Filter by analytics.files_scanned • Introduced in: 9.14
analytics.bytes_used	integer	query	False	Filter by analytics.bytes_used • Introduced in: 9.17

Name	Type	In	Required	Description
analytics.report_time	string	query	False	Filter by analytics.report_time • Introduced in: 9.17
analytics.total_files	integer	query	False	Filter by analytics.total_files • Introduced in: 9.14
analytics.scan_throttle_reason.code	string	query	False	Filter by analytics.scan_throttle_reason.code • Introduced in: 9.14
analytics.scan_throttle_reason.message	string	query	False	Filter by analytics.scan_throttle_reason.message • Introduced in: 9.14
analytics.scan_throttle_reason.arguments	string	query	False	Filter by analytics.scan_throttle_reason.arguments • Introduced in: 9.14
analytics.subdir_count	integer	query	False	Filter by analytics.subdir_count • Introduced in: 9.17
analytics.state	string	query	False	Filter by analytics.state • Introduced in: 9.8

Name	Type	In	Required	Description
analytics.supported	boolean	query	False	Filter by analytics.supported • Introduced in: 9.8
analytics.scan_progress	integer	query	False	Filter by analytics.scan_progress • Introduced in: 9.8
analytics.unsupported_reason.code	string	query	False	Filter by analytics.unsupported_reason.code • Introduced in: 9.8
analytics.unsupported_reason.message	string	query	False	Filter by analytics.unsupported_reason.message • Introduced in: 9.8
nodes.uuid	string	query	False	Filter by nodes.uuid • Introduced in: 9.17
nodes.name	string	query	False	Filter by nodes.name • Introduced in: 9.17
style	string	query	False	Filter by style
quota.state	string	query	False	Filter by quota.state
is_svm_root	boolean	query	False	Filter by is_svm_root • Introduced in: 9.7
create_time	string	query	False	Filter by create_time

Name	Type	In	Required	Description
snapshot_policy.name	string	query	False	Filter by snapshot_policy.name
snapshot_policy.uuid	string	query	False	Filter by snapshot_policy.uuid
is_object_store	boolean	query	False	Filter by is_object_store • Introduced in: 9.8
cloud_retrieval_policy	string	query	False	Filter by cloud_retrieval_policy • Introduced in: 9.8
granular_data	boolean	query	False	Filter by granular_data • Introduced in: 9.11
error_state.has_bad_blocks	boolean	query	False	Filter by error_state.has_bad_blocks
error_state.is_inconsistent	boolean	query	False	Filter by error_state.is_inconsistent
comment	string	query	False	Filter by comment • maxLength: 1023 • minLength: 0
tiering.object_tags	string	query	False	Filter by tiering.object_tags • Introduced in: 9.8 • maxLength: 257

Name	Type	In	Required	Description
tiering.policy	string	query	False	Filter by tiering.policy
tiering.min_cooling_days	integer	query	False	Filter by tiering.min_cooling_days • Introduced in: 9.8 • Max value: 183 • Min value: 2
size	integer	query	False	Filter by size
cloud_write_enabled	boolean	query	False	Filter by cloud_write_enabled • Introduced in: 9.13
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
analytics	analytics	Additional file system analytics information that is non-modifiable amongst all elements in the collection. This property is only populated if file system analytics is enabled on the containing volume. This analytics object captures properties that are non-modifiable amongst all elements included in the `records` array. The non-modifiable properties are included here, rather than within the information for each element, to avoid returning an excessive amount of duplicated information when the collection is large.
num_records	integer	Number of records
records	array[volume]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ]
      }
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
```

```
      },
      "_tags": [
        "team:csi",
        "environment:test"
      ],
      "activity_tracking": {
        "state": "string",
        "unsupported_reason": {
          "code": "124518405",
          "message": "Volume activity tracking cannot be enabled on
volumes that contain LUNs."
        }
      },
      "aggregates": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "aggressive_readahead_mode": "string",
      "analytics": {
        "by_accessed_time": {
          "bytes_used": {
            "aged_data_metric": 15.23,
            "labels": [
              "2019-07",
              "2019-06",
              "2019-05",
              "2019",
              "2018",
              "--2017",
              "unknown"
            ],
            "newest_label": "2019-07",
            "oldest_label": "2019-07",
            "percentages": [
              0.1,
              11.24,
              0.18,
              15.75,
              0.75,
```

```
            83.5,
            0
          ],
          "values": [
            15925248,
            1735569408,
            27672576,
            2430595072,
            116105216,
            12889948160,
            0
          ]
        }
      },
      "by_modified_time": {
        "bytes_used": {
          "aged_data_metric": 15.23,
          "labels": [
            "2019-07",
            "2019-06",
            "2019-05",
            "2019",
            "2018",
            "--2017",
            "unknown"
          ],
          "newest_label": "2019-07",
          "oldest_label": "2019-07",
          "percentages": [
            0.1,
            11.24,
            0.18,
            15.75,
            0.75,
            83.5,
            0
          ],
          "values": [
            15925248,
            1735569408,
            27672576,
            2430595072,
            116105216,
            12889948160,
            0
          ]
```

```
          }
        },
        "bytes_used": 15436648448,
        "file_count": 21134,
        "files_scanned": 43002,
        "initialization": {
          "state": "string"
        },
        "report_time": "2024-11-06 13:57:15 -0500",
        "scan_progress": 17,
        "scan_throttle_reason": {
          "arguments": [
            "string"
          ],
          "code": "6739881",
          "message": "The file system analytics scan running on volume
\"fsavol2\" in SVM \"vs2\" has slowed down on node \"my_node\". Reason:
Computing resources are being used by higher priority workloads."
        },
        "state": "string",
        "subdir_count": 35,
        "total_files": 101890,
        "unsupported_reason": {
          "code": "111411207",
          "message": "File system analytics cannot be enabled on
volumes that contain LUNs."
        }
      },
      "anti_ransomware": {
        "attack_detected_by": "string",
        "attack_detection_parameters": {
          "file_create_op_rate_surge_notify_percent": 100
        },
        "attack_probability": "string",
        "attack_reports": [
          {
            "_links": {
              "suspects": {
                "href": "/api/resourcelink"
              }
            },
            "time": "2021-06-01 11:06:41 -0400"
          }
        ],
        "block_device_detection_start_time": "string",
        "block_device_detection_state": "string",
```

```
        "dry_run_start_time": "string",
        "space": {
          "snapshot_count": 0,
          "used": 0,
          "used_by_logs": 0,
          "used_by_snapshots": 0
        },
        "state": "string",
        "surge_usage": {
          "file_create_peak_rate_per_minute": 10,
          "file_delete_peak_rate_per_minute": 50,
          "file_rename_peak_rate_per_minute": 30,
          "high_entropy_data_write_peak_percent": 30,
          "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
          "time": "2021-12-01 12:46:20 -0500"
        },
        "suspect_files": [
          {
            "count": 0,
            "entropy": "string",
            "format": "string"
          }
        ],
        "typical_usage": {
          "file_create_peak_rate_per_minute": 50,
          "file_delete_peak_rate_per_minute": 10,
          "file_rename_peak_rate_per_minute": 5,
          "high_entropy_data_write_peak_percent": 10,
          "high_entropy_data_write_peak_rate_kb_per_minute": 1200
        },
        "workload": {
          "file_extension_types_count": 3,
          "file_extensions_observed": [
            "pdf",
            "jpeg",
            "txt"
          ],
          "historical_statistics": {
            "file_create_peak_rate_per_minute": 50,
            "file_delete_peak_rate_per_minute": 10,
            "file_rename_peak_rate_per_minute": 5,
            "high_entropy_data_write_peak_percent": 10,
            "high_entropy_data_write_peak_rate_kb_per_minute": 1200
          },
          "newly_observed_file_extensions": [
            {
```

```
            "count": [
              20
            ],
            "name": [
              "lockile"
            ]
          }
        ],
        "surge_statistics": {
          "file_create_peak_rate_per_minute": 10,
          "file_delete_peak_rate_per_minute": 50,
          "file_rename_peak_rate_per_minute": 30,
          "high_entropy_data_write_peak_percent": 30,
          "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
          "time": "2021-12-01 12:46:20 -0500"
        },
        "surge_usage": {
          "file_create_peak_rate_per_minute": 10,
          "file_delete_peak_rate_per_minute": 50,
          "file_rename_peak_rate_per_minute": 30,
          "high_entropy_data_write_peak_percent": 30,
          "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
          "newly_observed_file_extensions": [
            {
              "count": [
                20
              ],
              "name": [
                "lockile"
              ]
            }
          ],
          "time": "2021-12-01 12:46:20 -0500"
        },
        "typical_usage": {
          "file_create_peak_rate_per_minute": 50,
          "file_delete_peak_rate_per_minute": 10,
          "file_rename_peak_rate_per_minute": 5,
          "high_entropy_data_write_peak_percent": 10,
          "high_entropy_data_write_peak_rate_kb_per_minute": 1200
        }
      }
    },
    "application": {
      "name": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
```

```
      },
      "asynchronous_directory_delete": {
        "trash_bin": "string"
      },
      "autosize": {
        "mode": "string"
      },
      "clone": {
        "inherited_physical_used": 0,
        "inherited_savings": 0,
        "parent_snapshot": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "this_snapshot",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "parent_svm": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "parent_volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        },
        "split_complete_percent": 0,
        "split_estimate": 0
      },
      "cloud_retrieval_policy": "string",
      "comment": "string",
      "consistency_group": {
        "name": "consistency_group_1",
        "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
      },
```

```
      "constituents": [
        {
          "aggregates": {
            "name": "string",
            "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
          },
          "movement": {
            "cutover_window": 30,
            "destination_aggregate": {
              "_links": {
                "self": {
                  "href": "/api/resourcelink"
                }
              },
              "name": "aggr1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            },
            "percent_complete": 0,
            "state": "replicating",
            "tiering_policy": "string"
          },
          "name": "string",
          "node": {
            "name": "string",
            "uuid": "string"
          },
          "space": {
            "available": 0,
            "block_storage_inactive_user_data": 0,
            "capacity_tier_footprint": 0,
            "footprint": 0,
            "local_tier_footprint": 0,
            "logical_space": {
              "available": 0,
              "used_by_afs": 0
            },
            "max_size": "string",
            "metadata": 0,
            "over_provisioned": 0,
            "performance_tier_footprint": 0,
            "snapshot": {
              "used": 0
            },
            "total_footprint": 0,
            "total_metadata": 0,
            "total_metadata_footprint": 0,
```

```
            "used": 0
          }
        }
      ],
      "create_time": "2018-06-04 15:00:00 -0400",
      "efficiency": {
        "application_io_size": "string",
        "auto_state": "string",
        "compaction": "string",
        "compression": "string",
        "compression_type": "string",
        "cross_volume_dedupe": "string",
        "dedupe": "string",
        "idcs_scanner": {
          "mode": "string",
          "operation_state": "string",
          "status": "string",
          "threshold_inactive_time": "P14D"
        },
        "last_op_begin": "string",
        "last_op_end": "string",
        "last_op_err": "string",
        "last_op_size": 0,
        "last_op_state": "string",
        "op_state": "string",
        "policy": {
          "name": "string"
        },
        "progress": "string",
        "ratio": 0,
        "scanner": {
          "state": "string"
        },
        "schedule": "string",
        "space_savings": {
          "compression": 0,
          "compression_percent": 0,
          "dedupe": 0,
          "dedupe_percent": 0,
          "dedupe_sharing": 0,
          "total": 0,
          "total_percent": 0
        },
        "state": "string",
        "storage_efficiency_mode": "string",
        "type": "string",
```

```
        "volume_path": "string"
      },
      "encryption": {
        "action": "string",
        "key_create_time": "2022-01-01 14:00:00 -0500",
        "key_id": "string",
        "state": "string",
        "status": {
          "code": "string",
          "message": "string"
        },
        "type": "string"
      },
      "files": {
        "inodefile_capacity": 0,
        "used": 0
      },
      "flash_pool": {
        "cache_eligibility": "string",
        "cache_retention_priority": "string",
        "caching_policy": "string"
      },
      "flexcache_endpoint_type": "string",
      "flexgroup": {
        "name": "my_flexgroup",
        "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
      },
      "granular_data_mode": "string",
      "guarantee": {
        "type": "string"
      },
      "language": "string",
      "metric": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "cloud": {
          "duration": "PT15S",
          "iops": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency": {
```

```
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "duration": "PT15S",
        "flexcache": {
          "bandwidth_savings": 4096,
          "cache_miss_percent": 20,
          "duration": "PT1D",
          "status": "ok",
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 06:20:13 -0500"
      },
      "movement": {
        "capacity_tier_optimized": true,
        "cutover_window": 30,
        "destination_aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "percent_complete": 0,
```

```
        "start_time": "2020-12-07 03:45:12 -0500",
        "state": "replicating",
        "tiering_policy": "string"
      },
      "name": "vol_cs_dept",
      "nas": {
        "export_policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "id": 100,
          "name": "default"
        },
        "junction_parent": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "vs1_root",
          "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
        },
        "path": "/user/my_volume",
        "security_style": "string",
        "unix_permissions": 493
      },
      "nodes": [
        {
          "name": "string",
          "uuid": "string"
        }
      ],
      "optimize_aggregates": true,
      "qos": {
        "policy": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "max_throughput": [
            "900KB/s",
            "500MB/s",
            "120GB/s",
```

```
            "5000IOPS",
            "5000IOPS,500KB/s",
            "2500IOPS,100MB/s",
            "1000IOPS,25MB/s"
          ],
          "max_throughput_iops": 10000,
          "max_throughput_mbps": 500,
          "min_throughput": [
            "900KB/s",
            "500MB/s",
            "120GB/s",
            "5000IOPS",
            "5000IOPS,500KB/s",
            "2500IOPS,100MB/s",
            "1000IOPS,25MB/s"
          ],
          "min_throughput_iops": 2000,
          "min_throughput_mbps": 500,
          "name": "performance",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      },
      "quota": {
        "state": "string"
      },
      "rebalancing": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "data_moved": 0,
        "engine": {
          "movement": {
            "file_moves_started": 0,
            "last_error": {
              "code": 0,
              "destination": 0,
              "file_id": 0,
              "time": "2018-06-04 15:00:00 -0400"
            },
            "most_recent_start_time": "2018-06-04 15:00:00 -0400"
          },
          "scanner": {
            "blocks_scanned": 0,
            "blocks_skipped": {
```

```
            "efficiency_blocks": 0,
            "efficiency_percent": 0,
            "fast_truncate": 0,
            "footprint_invalid": 0,
            "in_snapshot": 0,
            "incompatible": 0,
            "metadata": 0,
            "on_demand_destination": 0,
            "other": 0,
            "remote_cache": 0,
            "too_large": 0,
            "too_small": 0,
            "write_fenced": 0
          },
          "files_scanned": 0,
          "files_skipped": {
            "efficiency_blocks": 0,
            "efficiency_percent": 0,
            "fast_truncate": 0,
            "footprint_invalid": 0,
            "in_snapshot": 0,
            "incompatible": 0,
            "metadata": 0,
            "on_demand_destination": 0,
            "other": 0,
            "remote_cache": 0,
            "too_large": 0,
            "too_small": 0,
            "write_fenced": 0
          }
        }
      },
      "imbalance_percent": 0,
      "imbalance_size": 0,
      "max_constituent_imbalance_percent": 0,
      "max_runtime": "string",
      "notices": [
        {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
```

```
        }
      ],
      "runtime": "string",
      "start_time": "string",
      "state": "rebalancing",
      "stop_time": "string",
      "target_used": 0,
      "used_for_imbalance": 0
    },
    "scheduled_snapshot_naming_scheme": "string",
    "sizing_method": "string",
    "snaplock": {
      "append_mode_enabled": "",
      "autocommit_period": "P30M",
      "compliance_clock_time": "2018-06-04 15:00:00 -0400",
      "expiry_time": "Wed Sep  5 11:02:42 GMT 2018",
      "is_audit_log": 1,
      "litigation_count": 10,
      "privileged_delete": "enabled",
      "retention": {
        "default": "P30Y",
        "maximum": "P30Y",
        "minimum": "P30Y"
      },
      "type": "enterprise",
      "unspecified_retention_file_count": 10
    },
    "snapshot_count": 0,
    "snapshot_policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "space": {
      "auto_adaptive_compression_footprint_data_reduction": 0,
      "available": 0,
      "block_storage_inactive_user_data": 0,
      "block_storage_inactive_user_data_percent": 0,
      "capacity_tier_footprint": 0,
      "capacity_tier_footprint_data_reduction": 0,
      "compaction_footprint_data_reduction": 0,
      "cross_volume_dedupe_metafiles_footprint": 0,
```

```
        "cross_volume_dedupe_metafiles_temporary_footprint": 0,
        "dedupe_metafiles_footprint": 0,
        "dedupe_metafiles_temporary_footprint": 0,
        "delayed_free_footprint": 0,
        "effective_total_footprint": 0,
        "file_operation_metadata": 0,
        "filesystem_size": 0,
        "footprint": 0,
        "local_tier_footprint": 0,
        "logical_space": {
          "available": 0,
          "used": 0,
          "used_by_afs": 0,
          "used_by_snapshots": 0,
          "used_percent": 0
        },
        "max_size": "string",
        "metadata": 0,
        "over_provisioned": 0,
        "overwrite_reserve": 0,
        "overwrite_reserve_used": 0,
        "percent_used": 0,
        "performance_tier_footprint": 0,
        "size_available_for_snapshots": 0,
        "snapmirror_destination_footprint": 0,
        "snapshot": {
          "autodelete": {
            "commitment": "string",
            "defer_delete": "string",
            "delete_order": "string",
            "prefix": "string",
            "trigger": "string"
          },
          "autodelete_trigger": "string",
          "reserve_available": 0,
          "reserve_size": 0,
          "space_used_percent": 0,
          "used": 0
        },
        "snapshot_reserve_unusable": 0,
        "snapshot_spill": 0,
        "total_footprint": 0,
        "total_metadata": 0,
        "total_metadata_footprint": 0,
        "used": 0,
        "user_data": 0,
```

```
        "volume_guarantee_footprint": 0
      },
      "state": "string",
      "statistics": {
        "cifs_ops_raw": {
          "access": {
            "count": 1000,
            "total_time": 200
          },
          "audit": {
            "count": 1000,
            "total_time": 200
          },
          "create": {
            "dir": {
              "count": 1000,
              "total_time": 200
            },
            "file": {
              "count": 1000,
              "total_time": 200
            },
            "other": {
              "count": 1000,
              "total_time": 200
            },
            "symlink": {
              "count": 1000,
              "total_time": 200
            }
          },
          "getattr": {
            "count": 1000,
            "total_time": 200
          },
          "link": {
            "count": 1000,
            "total_time": 200
          },
          "lock": {
            "count": 1000,
            "total_time": 200
          },
          "lookup": {
            "count": 1000,
            "total_time": 200
```

```
        },
        "open": {
          "count": 1000,
          "total_time": 200
        },
        "read": {
          "count": 1000,
          "total_time": 200,
          "volume_protocol_latency_histogram_counts": [
            0,
            0,
            0,
            0,
            0,
            15,
            35,
            100,
            200,
            200,
            300,
            500,
            500,
            500,
            1000,
            1000,
            800,
            500,
            500,
            300,
            200,
            50,
            40,
            15,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
```

```
            0,
            0,
            0
          ],
          "volume_protocol_latency_histogram_labels": [
            "<2us",
            "<6us",
            "<10us",
            "<14us",
            "<20us",
            "<40us",
            "<60us",
            "<80us",
            "<100us",
            "<200us",
            "<400us",
            "<600us",
            "<800us",
            "<1ms",
            "<2ms",
            "<4ms",
            "<6ms",
            "<8ms",
            "<10ms",
            "<12ms",
            "<14ms",
            "<16ms",
            "<18ms",
            "<20ms",
            "<40ms",
            "<60ms",
            "<80ms",
            "<100ms",
            "<200ms",
            "<400ms",
            "<600ms",
            "<800ms",
            "<1s",
            "<2s",
            "<4s",
            "<6s",
            "<8s",
            "<10s",
            "<20s",
            ">20s"
          ],
```

```
            "volume_protocol_size_histogram_counts": [
              2400,
              1055,
              1100,
              700,
              500,
              300,
              200,
              100,
              100,
              50,
              50,
              75,
              25,
              0,
              0
            ],
            "volume_protocol_size_histogram_labels": [
              "<    4KB",
              "=    4KB",
              "<    8KB",
              "=    8KB",
              "<   16KB",
              "=   16KB",
              "<   32KB",
              "=   32KB",
              "<   64KB",
              "=   64KB",
              "<  256KB",
              "=  256KB",
              "< 1024KB",
              "= 1024KB",
              "> 1024KB"
            ]
          },
          "readdir": {
            "count": 1000,
            "total_time": 200
          },
          "readlink": {
            "count": 1000,
            "total_time": 200
          },
          "rename": {
            "count": 1000,
            "total_time": 200
```

```
        },
        "setattr": {
          "count": 1000,
          "total_time": 200
        },
        "unlink": {
          "count": 1000,
          "total_time": 200
        },
        "watch": {
          "count": 1000,
          "total_time": 200
        },
        "write": {
          "count": 1000,
          "total_time": 200,
          "volume_protocol_latency_histogram_counts": [
            0,
            0,
            0,
            0,
            0,
            15,
            35,
            100,
            200,
            200,
            300,
            500,
            500,
            500,
            1000,
            1000,
            800,
            500,
            500,
            300,
            200,
            50,
            40,
            15,
            0,
            0,
            0,
            0,
            0,
```

```
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0
          ],
          "volume_protocol_latency_histogram_labels": [
            "<2us",
            "<6us",
            "<10us",
            "<14us",
            "<20us",
            "<40us",
            "<60us",
            "<80us",
            "<100us",
            "<200us",
            "<400us",
            "<600us",
            "<800us",
            "<1ms",
            "<2ms",
            "<4ms",
            "<6ms",
            "<8ms",
            "<10ms",
            "<12ms",
            "<14ms",
            "<16ms",
            "<18ms",
            "<20ms",
            "<40ms",
            "<60ms",
            "<80ms",
            "<100ms",
            "<200ms",
            "<400ms",
            "<600ms",
            "<800ms",
            "<1s",
```

```
            "<2s",
            "<4s",
            "<6s",
            "<8s",
            "<10s",
            "<20s",
            ">20s"
          ],
          "volume_protocol_size_histogram_counts": [
            2400,
            1055,
            1100,
            700,
            500,
            300,
            200,
            100,
            100,
            50,
            50,
            75,
            25,
            0,
            0
          ],
          "volume_protocol_size_histogram_labels": [
            "<    4KB",
            "=    4KB",
            "<    8KB",
            "=    8KB",
            "<   16KB",
            "=   16KB",
            "<   32KB",
            "=   32KB",
            "<   64KB",
            "=   64KB",
            "<  256KB",
            "=  256KB",
            "< 1024KB",
            "= 1024KB",
            "> 1024KB"
          ]
        }
      },
      "cloud": {
        "iops_raw": {
```

```
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
          },
          "status": "ok",
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "flexcache_raw": {
          "cache_miss_blocks": 10,
          "client_requested_blocks": 500,
          "status": "ok",
          "timestamp": "2017-01-25 06:20:13 -0500"
        },
        "iops_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency_raw": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "nfs_ops_raw": {
          "access": {
            "count": 1000,
            "total_time": 200
          },
          "audit": {
            "count": 1000,
            "total_time": 200
          },
          "create": {
            "dir": {
              "count": 1000,
              "total_time": 200
            },
            "file": {
              "count": 1000,
              "total_time": 200
            },
```

```
            "other": {
              "count": 1000,
              "total_time": 200
            },
            "symlink": {
              "count": 1000,
              "total_time": 200
            }
          },
          "getattr": {
            "count": 1000,
            "total_time": 200
          },
          "link": {
            "count": 1000,
            "total_time": 200
          },
          "lock": {
            "count": 1000,
            "total_time": 200
          },
          "lookup": {
            "count": 1000,
            "total_time": 200
          },
          "open": {
            "count": 1000,
            "total_time": 200
          },
          "read": {
            "count": 1000,
            "total_time": 200,
            "volume_protocol_latency_histogram_counts": [
              0,
              0,
              0,
              0,
              0,
              15,
              35,
              100,
              200,
              200,
              300,
              500,
              500,
```

```
            500,
            1000,
            1000,
            800,
            500,
            500,
            300,
            200,
            50,
            40,
            15,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0,
            0
          ],
          "volume_protocol_latency_histogram_labels": [
            "<2us",
            "<6us",
            "<10us",
            "<14us",
            "<20us",
            "<40us",
            "<60us",
            "<80us",
            "<100us",
            "<200us",
            "<400us",
            "<600us",
            "<800us",
            "<1ms",
            "<2ms",
            "<4ms",
            "<6ms",
```

```
            "<8ms",
            "<10ms",
            "<12ms",
            "<14ms",
            "<16ms",
            "<18ms",
            "<20ms",
            "<40ms",
            "<60ms",
            "<80ms",
            "<100ms",
            "<200ms",
            "<400ms",
            "<600ms",
            "<800ms",
            "<1s",
            "<2s",
            "<4s",
            "<6s",
            "<8s",
            "<10s",
            "<20s",
            ">20s"
          ],
          "volume_protocol_size_histogram_counts": [
            2400,
            1055,
            1100,
            700,
            500,
            300,
            200,
            100,
            100,
            50,
            50,
            75,
            25,
            0,
            0
          ],
          "volume_protocol_size_histogram_labels": [
            "<    4KB",
            "=    4KB",
            "<    8KB",
            "=    8KB",
```

```
            "<   16KB",
            "=   16KB",
            "<   32KB",
            "=   32KB",
            "<   64KB",
            "=   64KB",
            "<  256KB",
            "=  256KB",
            "< 1024KB",
            "= 1024KB",
            "> 1024KB"
          ]
        },
        "readdir": {
          "count": 1000,
          "total_time": 200
        },
        "readlink": {
          "count": 1000,
          "total_time": 200
        },
        "rename": {
          "count": 1000,
          "total_time": 200
        },
        "setattr": {
          "count": 1000,
          "total_time": 200
        },
        "unlink": {
          "count": 1000,
          "total_time": 200
        },
        "watch": {
          "count": 1000,
          "total_time": 200
        },
        "write": {
          "count": 1000,
          "total_time": 200,
          "volume_protocol_latency_histogram_counts": [
            0,
            0,
            0,
            0,
            0,
```

```
          15,
          35,
          100,
          200,
          200,
          300,
          500,
          500,
          500,
          1000,
          1000,
          800,
          500,
          500,
          300,
          200,
          50,
          40,
          15,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0
        ],
        "volume_protocol_latency_histogram_labels": [
          "<2us",
          "<6us",
          "<10us",
          "<14us",
          "<20us",
          "<40us",
          "<60us",
          "<80us",
          "<100us",
```

```
            "<200us",
            "<400us",
            "<600us",
            "<800us",
            "<1ms",
            "<2ms",
            "<4ms",
            "<6ms",
            "<8ms",
            "<10ms",
            "<12ms",
            "<14ms",
            "<16ms",
            "<18ms",
            "<20ms",
            "<40ms",
            "<60ms",
            "<80ms",
            "<100ms",
            "<200ms",
            "<400ms",
            "<600ms",
            "<800ms",
            "<1s",
            "<2s",
            "<4s",
            "<6s",
            "<8s",
            "<10s",
            "<20s",
            ">20s"
          ],
          "volume_protocol_size_histogram_counts": [
            2400,
            1055,
            1100,
            700,
            500,
            300,
            200,
            100,
            100,
            50,
            50,
            75,
            25,
```

```
            0,
            0
          ],
          "volume_protocol_size_histogram_labels": [
            "<    4KB",
            "=    4KB",
            "<    8KB",
            "=    8KB",
            "<   16KB",
            "=   16KB",
            "<   32KB",
            "=   32KB",
            "<   64KB",
            "=   64KB",
            "<  256KB",
            "=  256KB",
            "< 1024KB",
            "= 1024KB",
            "> 1024KB"
          ]
        }
      },
      "status": "ok",
      "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "status": [
      "string"
    ],
    "style": "string",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "tiering": {
      "object_tags": [
        "string"
```

```
          ],
          "policy": "string",
          "supported": true
        },
        "type": "string",
        "use_mirrored_aggregates": true,
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    ]
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
labels	array[string]	Labels for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
labels	array[string]	Labels for this histogram

by_modified_time

File system analytics information, broken down by date of last modification.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

analytics

Additional file system analytics information that is non-modifiable amongst all elements in the collection.

This property is only populated if file system analytics is enabled on the containing volume.

This analytics object captures properties that are non-modifiable amongst all elements included in the `records` array. The non-modifiable properties are included here, rather than within the information for each element, to avoid returning an excessive amount of duplicated information when the collection is large.

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.

_links

Name	Type	Description
self	href	

unsupported_reason

Name	Type	Description
code	string	If volume activity tracking is not supported on the volume, this field provides an appropriate error code.
message	string	If volume activity tracking is not supported on the volume, this field provides an error message detailing why this is the case.

activity_tracking

Name	Type	Description
state	string	Activity tracking state of the volume. If this value is "on", ONTAP collects top metrics information for the volume in real time. There is a slight impact to I/O performance in order to collect this information. If this value is "off", no activity tracking information is collected or available to view. • enum: ["off", "on"] • Introduced in: 9.10 • x-nullable: true
supported	boolean	This field indicates whether or not volume activity tracking is supported on the volume. If volume activity tracking is not supported, the reason why is provided in the "activity_tracking.unsupported_reason" field.
unsupported_reason	unsupported_reason	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

initialization

with any other time period. This usually occurs when the data was at some point associated with a

Name	Type	Description
state	string	State of the analytics file system scan.

scan_throttle_reason

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	string	Warning code indicating why scanner throttling is reported.
message	string	A message that provides details for scan throttling.

unsupported_reason

Name	Type	Description
code	string	If file system analytics is not supported on the volume, this field provides the error code explaining why.
message	string	If file system analytics is not supported on the volume, this field provides the error message explaining why.

analytics

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.

Name	Type	Description
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk.
file_count	integer	Number of descendants.
files_scanned	integer	Number of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
initialization	initialization	
report_time	string	Time of data collection.
scan_progress	integer	Percentage of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
scan_throttle_reason	scan_throttle_reason	

Name	Type	Description
state	string	File system analytics state of the volume. If this value is "on", ONTAP collects extra file system analytics information for all directories on the volume. There will be a slight impact to I/O performance to collect this information. If this value is "off", file system analytics information is not collected and not available to be viewed. If this value is "initializing", that means file system analytics was recently turned on, and the initialization scan to gather information for all existing files and directories is currently running. If this value is "initialization_paused", this means that the initialization scan is currently paused. If this value is 'unknown', this means that there was an internal error when determining the file system analytics state for the volume. • enum: ["unknown", "initializing", "initialization_paused", "off", "on"] • Introduced in: 9.8 • x-nullable: true
subdir_count	integer	Number of sub-directories.
supported	boolean	This field indicates whether or not file system analytics is supported on the volume. If file system analytics is not supported, the reason will be specified in the "analytics.unsupported_reason" field.
total_files	integer	Total number of files in the volume that the file system analytics initialization scan will process. Only returned when the state is `initializing`.
unsupported_reason	unsupported_reason	

anti_ransomware_volume_attack_detection_parameters

Name	Type	Description
based_on_file_create_op_rate	boolean	Specifies whether attack detection is based on the file create operations rate. This parameter is valid only for NAS volumes.
based_on_file_delete_op_rate	boolean	Specifies whether attack detection is based on the file delete operations rate. This parameter is valid only for NAS volumes.
based_on_file_rename_op_rate	boolean	Specifies whether attack detection is based on the file rename operations rate. This parameter is valid only for NAS volumes.
based_on_high_entropy_data_rate	boolean	Specifies whether a high entropy data rate should be considered for attack detection.
based_on_never_seen_before_file_extension	boolean	Specifies whether file extensions never seen before should be considered for attack detection.
block_device_auto_learned_encryption_threshold	integer	Specifies the block device auto learned encryption threshold.
file_create_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file create rate up to which it is considered normal behavior.
file_delete_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file delete rate up to which it is considered normal behavior.
file_rename_op_rate_surge_notify_percent	integer	Specifies the percent of surge in the file rename rate up to which it is considered normal behavior.

Name	Type	Description
high_entropy_data_surge_notify_percent	integer	Specifies the percentage of surge in high entropy data up to which it is considered as normal behavior. For example, if the usual high entropy data rate in the volume is 5% and if this parameter is set to 100%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 10% at any time. Similarly, if this parameter is set to 400%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 25%, and so on.
never_seen_before_file_extension_count_notify_threshold	integer	Specifies the number of files found with a never seen before file extension up to which it is considered normal behavior.
never_seen_before_file_extension_duration_in_hours	integer	Specifies the duration within which the specified number of files found with never seen before file extensions is considered normal behavior.
relaxing_popular_file_extensions	boolean	Specifies whether popular file extensions should be relaxed from being treated as a suspect for the attack. Some popular file extensions are .txt, .pdf, and so on.

_links

Name	Type	Description
suspects	href	

anti_ransomware_attack_report

Name	Type	Description
_links	_links	
time	string	Timestamp at which ransomware attack is observed.

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

space

Name	Type	Description
snapshot_count	integer	Total number of Anti-ransomware backup snapshots.
used	integer	Total space in bytes used by the Anti-ransomware feature.
used_by_logs	integer	Space in bytes used by the Anti-ransomware analytics logs.
used_by_snapshots	integer	Space in bytes used by the Anti-ransomware backup snapshots.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

suspect_files

Name	Type	Description
count	integer	Total number of `suspect_files.format` files observed by the Anti-ransomware analytics engine on the volume.
entropy	string	Indicates the entropy level of this file type.
format	string	File formats observed by the Anti-ransomware analytics engine on the volume.

typical_usage

Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

historical_statistics

Typical usage values of volume workload.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

newly_observed_file_extensions

Name	Type	Description
count	integer	Count of newly observed file extensions.
name	string	Name of the newly observed file extension.

surge_statistics

Usage values of the volume’s workload during surge.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
time	string	Timestamp at which the first surge in the volume's workload is observed.

anti_ransomware_volume_workload

Name	Type	Description
file_extension_types_count	integer	Count of types of file extensions observed in the volume.
file_extensions_observed	array[string]	File extensions observed in the volume.
historical_statistics	historical_statistics	Typical usage values of volume workload.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
surge_statistics	surge_statistics	Usage values of the volume's workload during surge.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

anti_ransomware

Anti-ransomware related information of the volume.

Name	Type	Description
attack_detected_by	string	This field specifies whether the attack was reported by `File Analysis` or `Encrypted data percentage analysis`.
attack_detection_parameters	anti_ransomware_volume_attack_detection_parameters	
attack_probability	string	Probability of a ransomware attack. `none` No suspected ransomware activity. `low` Minimally suspected ransomware activity. `moderate` Moderately suspected ransomware activity. `high` Significantly suspected ransomware activity.
attack_reports	array[anti_ransomware_attack_report]	
block_device_detection_start_time	string	This field specifies the block device evaluation start time.
block_device_detection_state	string	This field specifies the block device attack detection status. `evaluation_period` Attack detection is currently in its evaluation phase. `active_unsuitable_workload` Attack detection is active, but the current workload is not suitable for Anti-ransomware protection. `active_suitable_workload` Attack detection is active, and the current workload is appropriate for Anti-ransomware protection.
dry_run_start_time	string	Time when Anti-ransomware monitoring `state` is set to dry-run value for starting evaluation mode.
event_log	event_log	
space	space	

Name	Type	Description
state	string	Anti-ransomware state. `disabled` Anti-ransomware monitoring is disabled on the volume. This is the default state in a POST operation. `disable_in_progress` Anti-ransomware monitoring is being disabled and a cleanup operation is in effect. Valid in GET operation. `dry_run` Anti-ransomware monitoring is enabled in the evaluation mode. `enabled` Anti-ransomware monitoring is active on the volume. `paused` Anti-ransomware monitoring is paused on the volume. `enable_paused` Anti-ransomware monitoring is paused on the volume from its earlier enabled state. Valid in GET operation. `dry_run_paused` Anti-ransomware monitoring is paused on the volume from its earlier dry_run state. Valid in GET operation. For POST, the valid Anti-ransomware states are only `disabled`, `enabled` and `dry_run`, whereas for PATCH, `paused` is also valid along with the three valid states for POST.
surge_as_normal	boolean	Indicates whether or not to set the surge values as historical values. This field is no longer supported. Use update_baseline_from_surge instead.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
suspect_files	array[suspect_files]	

Name	Type	Description
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.
update_baseline_from_surge	boolean	Sets the observed surge value as the new baseline on a volume.
workload	anti_ransomware_volume_workload	

application

Name	Type	Description
name	string	Name of the application to which the volume belongs. Available only when the volume is part of an application.
uuid	string	UUID of the application to which the volume belongs. Available only when the volume is part of an application.

asynchronous_directory_delete

Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.

Name	Type	Description
enabled	boolean	Specifies whether asynchronous directory delete from the client is enabled on the volume.
trash_bin	string	Name of the trash bin directory. If no "trash_bin" property is specified when enabling, the default trash bin name, "._ontaptrashbin", is used.

autosize

Name	Type	Description
grow_threshold	integer	Used space threshold size, in percentage, for the automatic growth of the volume. When the amount of used space in the volume becomes greater than this threshold, the volume automatically grows unless it has reached the maximum size. The volume grows when 'space.used' is greater than this percent of 'space.size'. The 'grow_threshold' size cannot be less than or equal to the 'shrink_threshold' size..
maximum	integer	Maximum size in bytes up to which a volume grows automatically. This size cannot be less than the current volume size, or less than or equal to the minimum size of volume.
minimum	integer	Minimum size in bytes up to which the volume shrinks automatically. This size cannot be greater than or equal to the maximum size of volume.
mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows when the amount of used space is above the 'grow_threshold' value. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.

Name	Type	Description
shrink_threshold	integer	Used space threshold size, in percentage, for the automatic shrinkage of the volume. When the amount of used space in the volume drops below this threshold, the volume automatically shrinks unless it has reached the minimum size. The volume shrinks when the 'space.used' is less than the 'shrink_threshold' percent of 'space.size'. The 'shrink_threshold' size cannot be greater than or equal to the 'grow_threshold' size.

snapshot_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

parent_volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

clone

Name	Type	Description
has_flexclone	boolean	Specifies whether this volume is a parent of any FlexClone volume.
inherited_physical_used	integer	Inherited physical used from the clone's base snapshot.
inherited_savings	integer	Inherited savings from the clone's base snapshot.
is_flexclone	boolean	Specifies if this volume is a normal FlexVol volume or FlexClone volume. This field needs to be set when creating a FlexClone volume. Valid in POST.
parent_snapshot	snapshot_reference	
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
parent_volume	parent_volume	
split_complete_percent	integer	Percentage of FlexClone volume blocks split from its parent volume.
split_estimate	integer	Space required by the containing-aggregate to split the FlexClone volume.

Name	Type	Description
split_initiated	boolean	This field is set when a split is executed on any FlexClone volume, that is when the FlexClone volume is split from its parent FlexVol volume. Setting this field initiates a split of a FlexClone volume from a FlexVol volume. Valid in PATCH.

consistency_group

Consistency group the volume is part of.

Name	Type	Description
name	string	The name of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.
uuid	string	The UUID of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.

aggregates

Name	Type	Description
name	string	Name of the aggregate hosting the FlexGroup volume constituent.
uuid	string	Unique identifier for the aggregate.

destination_aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

node

Name	Type	Description
name	string	List of the node names hosting the FlexGroup volume constituent.
uuid	string	List of the node UUIDs hosting the FlexGroup volume constituent.

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.

snapshot

Name	Type	Description
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
footprint	integer	Data used for this volume in the aggregate, in bytes.
large_size_enabled	boolean	Specifies whether the support for large volumes and large files is enabled on the volume.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.

Name	Type	Description
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
snapshot	snapshot	
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
used_percent	integer	The virtual space used (includes volume reserves) before storage efficiency, as a percent.

constituents

Name	Type	Description
aggregates	aggregates	
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.
name	string	FlexGroup volume constituent name.

Name	Type	Description
node	node	
space	space	

idcs_scanner

Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.

Name	Type	Description
enabled	boolean	Specifies the administrative state of the inactive data compression scanner. Disabling inactive data compression is not allowed on Capacity optimized Flash with QAT supported platforms.
inactive_days	integer	Data blocks older than, or equal to, 'inactive_days' are picked up by the inactive data compression scanner. Valid for PATCH only. Only applicable when 'operation_state' set to 'active'.
mode	string	Specifies the mode of inactive data compression scanner. Valid for PATCH and GET.
operation_state	string	Specifies the operational state of the inactive data compression scanner. VALID for PATCH and GET. Valid options for PATCH are "idle" and "active".
status	string	Status of last inactive data compression scan on the volume.
threshold_inactive_time	string	Time interval after which inactive data compression is automatically triggered. The value is in days and is represented in the ISO-8601 format "P<num>D", for example "P3D" represents a duration of 3 days. This field is not supported on QAT supported platforms.</num>

policy

Name	Type	Description
name	string	Specifies the name of the efficiency policy. The "inline-only" and "none" policies are not supported on Capacity optimized Flash with QAT supported platform.

scanner

Name	Type	Description
compression	boolean	Start compression if scanning old data. Valid for PATCH and GET. This option is not supported for FSX/CVO platforms.
dedupe	boolean	Start deduplication if scanning old data. Valid for PATCH and GET.
scan_old_data	boolean	Indicates whether or not to scan old data. Valid for PATCH and GET.
state	string	State of the volume efficiency scanner. Valid for PATCH and GET. Valid options for PATCH are "idle" and "active".

space_savings

Name	Type	Description
compression	integer	Total disk space that is saved by compressing blocks on the referenced file system, in bytes.
compression_percent	integer	Percentage of total disk space that is saved by compressing blocks on the referenced file system.
dedupe	integer	Total disk space that is saved by deduplication and file cloning, in bytes.

Name	Type	Description
dedupe_percent	integer	Percentage of total disk space that is saved by deduplication and file cloning.
dedupe_sharing	integer	Total disk space that is shared due to deduplication and file cloning.
total	integer	Total disk space saved in the volume due to deduplication, compression and file cloning, in bytes.
total_percent	integer	Percentage of total disk space saved in the volume due to deduplication, compression and file cloning.

efficiency

Name	Type	Description
application_io_size	string	Block size to use by compression. 8k and auto are only allowed for POST. Only auto is supported on QAT supported platforms.
auto_state	string	Automatic deduplication schedule volume state. auto ‐ Volumes with auto_state set to auto start post-process deduplication automatically. deprioritized ‐ Volumes with auto_state set to deprioritized do not start post-process deduplication automatically.
compaction	string	The system can be enabled/disabled compaction. inline ‐ Data will be compacted first and written to the volume. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compaction enabled and some are disabled.

Name	Type	Description
compression	string	The system can be enabled/disabled compression. Disabling compression is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be compressed first and written to the volume. background ‐ Data will be written to the volume and compressed later. both ‐ Inline compression compresses the data and write to the volume, background compression compresses only the blocks on which inline compression is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compression enabled and some are disabled. that On volumes with container compression enabled, background compression refers to inactive data compression scan enabled on the volume.
compression_type	string	Compression type to use by compression. Valid for PATCH and GET.

Name	Type	Description
cross_volume_dedupe	string	The system can be enabled/disabled cross volume dedupe. it can be enabled only when dedupe is enabled. Disabling cross volume dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be cross volume deduped first and written to the volume. background ‐ Data will be written to the volume and cross volume deduped later. both ‐ Inline cross volume dedupe dedupes the data and write to the volume, background cross volume dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are cross volume dedupe enabled and some are disabled.
dedupe	string	The system can be enabled/disabled dedupe. Disabling dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be deduped first and written to the volume. background ‐ Data will be written to the volume and deduped later. both ‐ Inline dedupe dedupes the data and write to the volume, background dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are dedupe enabled and some are disabled.
has_savings	boolean	When true, indicates that the volume contains shared(deduplication, file clones) or compressed data.

Name	Type	Description
idcs_scanner	idcs_scanner	Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.
last_op_begin	string	Last sis operation begin timestamp.
last_op_end	string	Last sis operation end timestamp.
last_op_err	string	Last sis operation error text.
last_op_size	integer	Last sis operation size.
last_op_state	string	Last sis operation state.
logging_enabled	boolean	When true, indicates that space savings for any newly-written data are being logged.
op_state	string	Sis status of the volume.
policy	policy	
progress	string	Sis progress of the volume.
ratio	number	Storage efficiency that does not include the savings provided by snapshots.
scanner	scanner	
schedule	string	Schedule associated with volume.
space_savings	space_savings	

Name	Type	Description

state	string	Storage efficiency state of the volume. Currently, this field supports POST/PATCH only for RW (Read-Write) volumes on FSx for ONTAP and Cloud Volumes ONTAP.
		 disabled ‐ All storage efficiency features are disabled.
		 mixed ‐ Read-only field for FlexGroup volumes, storage efficiency is enabled on certain constituents and disabled on others.
		 On FSx for ONTAP and Cloud Volumes ONTAP ‐
		   enabled ‐ All supported storage efficiency features for the volume are enabled.
		   custom ‐ Read-only field currently only supported for the FSx for ONTAP and Cloud Volumes ONTAP, user-defined storage efficiency features are enabled.
		 For other platforms ‐
		   enabled ‐ At least one storage efficiency feature for the volume is enabled.
		
		• enum: ["disabled", "enabled", "mixed", "custom"]
		• Introduced in: 9.9
		• x-nullable: true

storage_efficiency_mode	string	Storage efficiency mode used by volume. This parameter is supported only on AFF platforms. There is no difference between default and efficient modes on QAT supported platforms and auto adaptive compression is set irrespective of the modes.
type	string	Sis Type of the volume.
volume_path	string	Absolute volume path of the volume.

status

Name	Type	Description
code	string	Encryption progress message code.
message	string	Encryption progress message.

encryption

Name	Type	Description
action	string	This field can be used to pause an ongoing rekey or conversion operation or resume a paused rekey or conversion operation. Valid in PATCH. The following actions are supported for this field: conversion_pause ‐ Pause an encryption conversion operation currently in progress. conversion_resume ‐ Resume a paused encryption conversion operation. rekey_pause ‐ Pause an encryption rekey operation currently in progress. rekey_resume ‐ Resume a paused encryption rekey operation.
enabled	boolean	Creates an encrypted or an unencrypted volume. For POST, when set to 'true', a new key is generated and used to encrypt the given volume. In that case, the underlying SVM must be configured with the key manager. When set to 'false', the volume created will be unencrypted. For PATCH, when set to 'true', it encrypts an unencrypted volume. Specifying the parameter as 'false' in a PATCH operation for an encrypted volume is only supported when moving the volume to another aggregate.
key_create_time	string	Encryption key creation time of the volume.

Name	Type	Description
key_id	string	The key ID used for creating encrypted volume. A new key-id is generated for creating an encrypted volume. This key-id is associated with the generated key.
rekey	boolean	If set to 'true', re-encrypts the volume with a new key. Valid in PATCH.
state	string	Volume encryption state. encrypted ‐ The volume is completely encrypted. encrypting ‐ Encryption operation is in progress. partial ‐ Some constituents are encrypted and some are not. Applicable only for FlexGroup volume. rekeying. Encryption of volume with a new key is in progress. unencrypted ‐ The volume is a plain-text one.
status	status	
type	string	Volume encryption type. none ‐ The volume is a plain-text one. volume ‐ The volume is encrypted with NVE (NetApp Volume Encryption). aggregate ‐ The volume is encrypted with NAE (NetApp Aggregate Encryption).

error_state

Name	Type	Description
has_bad_blocks	boolean	Indicates whether the volume has any corrupt data blocks. If the damaged data block is accessed, an IO error, such as EIO for NFS or STATUS_FILE_CORRUPT for CIFS, is returned.

Name	Type	Description
is_inconsistent	boolean	Indicates whether the file system has any inconsistencies. true ‐ File system is inconsistent. false ‐ File system in not inconsistent.

files

Name	Type	Description
inodefile_capacity	integer	Number of inodes that can currently be stored on the volume for user-visible files. This number dynamically increases as more user-visible files are created.
maximum	integer	The maximum number of files (inodes) for user-visible data allowed on the volume. This value can be increased or decreased. Increasing the maximum number of files does not immediately cause additional disk space to be used to track files. Instead, as more files are created on the volume, the system dynamically increases the number of disk blocks that are used to track files. The space assigned to track files is never freed, and this value cannot be decreased below the current number of files that can be tracked within the assigned space for the volume. Valid in PATCH.
used	integer	Number of files (inodes) used for user-visible data permitted on the volume. This field is valid only when the volume is online.

flash_pool

Name	Type	Description
cache_eligibility	string	If this parameter is specified, the command displays information only about the volume or volumes with the specified Flash Pool caching attributes.
cache_retention_priority	string	If this parameter is specified, the command displays the volumes that match the specified cache retention priority policy. A cache retention priority defines how long the blocks of a volume will be cached in the Flash Pool once they become cold.
caching_policy	string	This optionally specifies the caching policy to apply to the volume. A caching policy defines how the system caches a volume's data in Flash Cache modules. If a caching policy is not assigned to a volume, the system uses the caching policy that is assigned to the containing SVM. If a caching policy is not assigned to the containing SVM, the system uses the default cluster-wide policy.

flexgroup

Name	Type	Description
name	string	Name of the FlexGroup volume that the constituent is part of.
uuid	string	Unique identifier for the FlexGroup volume that the constituent is part of.

guarantee

Name	Type	Description
honored	boolean	Is the space guarantee of this volume honored in the aggregate?

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes

hosted on FabricPools.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache

Performance number for FlexCache used to measure cache effectiveness.

Name	Type	Description
bandwidth_savings	integer	Bandwidth savings denoting the amount of data served locally by the cache, in bytes.
cache_miss_percent	integer	Cache miss percentage.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS, latency and throughput.

Name	Type	Description
_links	_links	
cloud	cloud	Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes hosted on FabricPools.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
flexcache	flexcache	Performance number for FlexCache used to measure cache effectiveness.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
start_time	string	Start time of volume move.

Name	Type	Description
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

export_policy

Export Policy

Name	Type	Description
_links	_links	
id	integer	
name	string	

junction_parent

Name	Type	Description
_links	_links	
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.
uuid	string	Unique identifier for the parent volume.

nas

Name	Type	Description
export_policy	export_policy	Export Policy
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ Unix-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write) and 1 (execute). First digit selects the set user ID(4), set group ID (2) and sticky (1) attributes. The second digit selects permission for the owner of the file; the third selects permissions for other users in the same group; the fourth for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group and other permissions are given (as in 755, representing the second, third and fourth dight), first digit is assumed to be zero.

nodes

Name	Type	Description
name	string	List of the node names hosting the volume.
uuid	string	List of the node UUIDs hosting the volume.

policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

QoS information

Name	Type	Description
policy	policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

quota

Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
enabled	boolean	This option is used to enable or disable the quota for the volume. This option is valid only in PATCH. Quotas are enabled for FlexVol volumes or FlexGroup volumes when the quota state is "on". Quotas are disabled for FlexVol volumes or FlexGroup volumes when the quota state is "off".
state	string	Quota state of the volume

last_error

Error information for the last failed file move on the constituent.

Name	Type	Description
code	integer	Error code of the last file move error on the constituent.

Name	Type	Description
destination	integer	DSID of the destination constituent of the last file move error on the constituent.
file_id	integer	File ID of the last file move error on the constituent.
time	string	Time of the last file move error on the constituent.

movement

Properties on this constituent related to file movement.

Name	Type	Description
file_moves_started	integer	Number of file moves started on this constituent.
last_error	last_error	Error information for the last failed file move on the constituent.
most_recent_start_time	string	Start time of the most recent file move on the constituent.

blocks_skipped

Number of blocks skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of blocks skipped by the scanner on this constituent because fast truncate is currently running on files.

Name	Type	Description
footprint_invalid	integer	Number of blocks skipped by the scanner on this constituent because of files with invalid space footprints.
in_snapshot	integer	Number of blocks skipped by the scanner on this constituent because of files in snapshots.
incompatible	integer	Number of blocks skipped by the scanner on this constituent because of incompatible files.
metadata	integer	Number of blocks skipped by the scanner on this constituent because of metadata files.
on_demand_destination	integer	Number of blocks skipped by the scanner on this constituent because of on demand destination files.
other	integer	Number of blocks skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of blocks skipped by the scanner on this constituent because of remote caches.
too_large	integer	Number of blocks skipped by the scanner on this constituent because of files that are larger than rebalancing.max_file_size.
too_small	integer	Number of blocks skipped by the scanner on this constituent because of files that are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of blocks skipped by the scanner on this constituent because of files fenced for write operations.

files_skipped

Number of files skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of files skipped by the scanner on this constituent because fast truncate is currently running on the file.
footprint_invalid	integer	Number of files skipped by the scanner on this constituent because their space footprints are invalid.
in_snapshot	integer	Number of files skipped by the scanner on this constituent because they are trapped in snapshots.
incompatible	integer	Number of files skipped by the scanner on this constituent because they are incompatible.
metadata	integer	Number of files skipped by the scanner on this constituent because they metadata files.
on_demand_destination	integer	Number of files skipped by the scanner on this constituent because they are on demand destinations.
other	integer	Number of files skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of files skipped by the scanner on this constituent because they are remote caches.

Name	Type	Description
too_large	integer	Number of files skipped by the scanner on this constituent because they are larger than rebalancing.max_file_size.
too_small	integer	Number of files skipped by the scanner on this constituent because they are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of files skipped by the scanner on this constituent because they are fenced for write operations.

scanner

Properties related to determining which files to move and where to move them to.

Name	Type	Description
blocks_scanned	integer	Number of blocks scanned on this constituent.
blocks_skipped	blocks_skipped	Number of blocks skipped by the scanner on this constituent due to various reasons.
files_scanned	integer	Number of files scanned on this constituent.
files_skipped	files_skipped	Number of files skipped by the scanner on this constituent due to various reasons.

engine

Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
movement	movement	Properties on this constituent related to file movement.

Name	Type	Description
scanner	scanner	Properties related to determining which files to move and where to move them to.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

rebalancing

Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.

Name	Type	Description
_links	_links	
data_moved	integer	The amount of data that has been moved in or out of a constituent. A positive value represents data moving into the constituent while a negative value is data moving out of the constituent.
engine	engine	Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
exclude_snapshots	boolean	Specifies whether or not to exclude files that are stuck in snapshots during rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "exclude_snapshots" value. Once the operation is started, any changes to the "exclude_snapshots" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "exclude_snapshots" value.
imbalance_percent	integer	Represents the percentage the volume is out of balance.
imbalance_size	integer	Represents how much the volume is out of balance, in bytes.
max_constituent_imbalance_percent	integer	Absolute percentage of the constituent that is most out of balance. This value will update every 30 seconds when rebalancing is not active and every 10 seconds when rebalancing is active.
max_file_moves	integer	Specifies the maximum number of concurrent file moves in a volume capacity rebalancing operation on a constituent of the FlexGroup volume. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_file_moves" value. Once the operation is started, any changes to the "max_file_moves" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_file_moves" value.

Name	Type	Description
max_runtime	string	This optional field specifies the maximum time a capacity rebalancing operation runs for. Once the maximum runtime has passed, the capacity rebalancing operation stops. If it is not set, the default value is 6 hours. This value cannot be updated while a capacity rebalancing operation is running. The maximum runtime can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P3D" represents a duration of 3 days. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively.</num></num></num></num></num>
max_threshold	integer	Specifies the maximum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is larger than this value, files are moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_threshold" value. Once the operation is started, any changes to the "max_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_threshold" value.

Name	Type	Description
min_file_size	integer	Specifies the minimum file size to consider for a volume capacity rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "min_file_size" value. Once the operation is started, any changes to the "min_file_size" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_file_size" value. The value must be a multiple of 4KB. If it is not set, the default value is 100MB. Setting "min-file-size" to less than the default value leads to more files being moved. Moved files use granular data, which may impact read/write I/O performance.
min_threshold	integer	Specifies the minimum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is smaller than this value, files are not moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it will use the current "min_threshold" value. Once the operation is started, any changes to the "min_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_threshold" value.
notices	array[error]	Capacity rebalancing notice messages.
runtime	string	Duration the capacity rebalancing operation has been running.

Name	Type	Description
start_time	string	Time when the current capacity rebalancing operation started, or when a future scheduled rebalancing operation begins.

Name	Type	Description
state	string	State of the volume capacity rebalancing operation. PATCH the state to "starting" to trigger the capacity rebalance operation, and include start_time to schedule rebalancing. PATCH the state to "stopping" to stop the capacity rebalance operation, or cancel a scheduled rebalancing operation. PATCH without the state with a valid start_time to modify the start_time of an existing scheduled rebalance operation. While a FlexGroup volume is rebalancing, every constituent will have a rebalancing engine that can either be scanning the filesystem for space usage and files to move, actively moving files or temporarily doing neither. If one or more constituents has a state of "rebalancing_source" or "rebalancing_dest", then files are being moved to rebalance the FlexGroup volume. If no files are being moved, more information about what the rebalancing engine is doing for each constituent is available using the "rebalancing.engine" property. The following values apply to FlexGroup volumes. not_running ‐ capacity rebalancing is not running on the volume. starting ‐ used in a PATCH operation to start a capacity rebalancing operation. rebalancing ‐ capacity rebalancing is running on the volume. paused ‐ volume capacity rebalancing is paused on the volume. stopping ‐ used in a PATCH operation to stop a capacity rebalancing operation. unknown ‐ the system was unable to determine the rebalancing state for the volume. The following values apply to

Name	Type	Description
stop_time	string	Time when the capacity rebalancing operation stopped.
target_used	integer	Represents the ideal used size of each constituent. Calculated by dividing the total FlexGroup volume used size by the number of constituents.
used_for_imbalance	integer	Represents the used size of each constituent, as determined by the rebalancing engine. Calculated by subtracting the size used by snapshots, the size of files pending deletion and the size of filesystem metadata from the volume used size.

retention

the system was unable to determine the rebalancing state for the constituent.

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.</num></num></num></num></num>

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".</num></num></num></num></num>
compliance_clock_time	string	This is the volume compliance clock time which is used to manage the SnapLock objects in the volume.
expiry_time	string	Expiry time of the volume. For volumes with an infinite, indefinite or unspecified SnapLock expiry time, "9999-12-31T23:59:59" is used to denote the time.
is_audit_log	boolean	Indicates if this volume has been configured as SnapLock audit log volume for the SVM .

Name	Type	Description
litigation_count	integer	Litigation count indicates the number of active legal-holds on the volume.
privileged_delete	string	Specifies the privileged-delete attribute of a SnapLock volume. On a SnapLock Enterprise (SLE) volume, a designated privileged user can selectively delete files irrespective of the retention time of the file. SLE volumes can have privileged delete as disabled, enabled or permanently_disabled and for SnapLock Compliance (SLC) volumes it is always permanently_disabled.
retention	retention	
type	string	The SnapLock type of the volume. compliance ‐ A SnapLock Compliance(SLC) volume provides the highest level of WORM protection and an administrator cannot destroy a SLC volume if it contains unexpired WORM files. enterprise ‐ An administrator can delete a SnapLock Enterprise(SLE) volume. non_snaplock ‐ Indicates the volume is non-snaplock.
unspecified_retention_file_count	integer	Indicates the number of files with an unspecified retention time in the volume.

destinations

Name	Type	Description
is_cloud	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to a cloud destination.

Name	Type	Description
is_ontap	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to an ONTAP destination. • readOnly: 1 • Introduced in: 9.9 • x-nullable: true

snapmirror

Specifies attributes for SnapMirror protection.

Name	Type	Description
destinations	destinations	
is_protected	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.

Name	Type	Description
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), in bytes.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.
used_by_snapshots	integer	Size that is logically used across all snapshots in the volume, in bytes.
used_percent	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), as a percentage.

autodelete

Name	Type	Description
commitment	string	By default, snapshot autodelete does not delete snapshots locked by Snapmirror, clones of a volume, a LUN, an NVMe namespace, or a file. Deletion of snapshots locked by these applications is specified using this option. The default value is try.
defer_delete	string	Allows the user to inform snapshot autodelete to defer the deletion of a specified snapshot until the end. The default value is user_created.

Name	Type	Description
delete_order	string	Specifies the order in which snapshot autodelete occurs. Ordering is done using the date and time the snapshot is created. The default value is oldest_first.
enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
prefix	string	Specifies the prefix of the snapshot which if matched, is deleted last. Used with autodelete_defer_delete when used with a prefix value.
target_free_space	integer	Snapshots are deleted, one at a time, until the used volume space reaches the value specified. The default is 20% free space or 80% utilized.
trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*.

snapshot

Name	Type	Description
autodelete	autodelete	
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume. This field will no longer be supported in a future release. Use autodelete.enabled instead.

Name	Type	Description
autodelete_trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*. This field will no longer be supported in a future release. Use autodelete.trigger instead.
reserve_available	integer	Size available for snapshots within the snapshot reserve, in bytes.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
reserve_size	integer	Size in the volume that has been set aside as a reserve for snapshot usage, in bytes.
space_used_percent	integer	Percentage of snapshot reserve size that has been used.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
auto_adaptive_compression_footprint_data_reduction	integer	Savings achieved due to Auto Adaptive Compression, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.

Name	Type	Description
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
block_storage_inactive_user_data_percent	integer	Percentage of size that is physically used in the performance tier of the volume.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
capacity_tier_footprint_data_reduction	integer	Savings achieved in the space used by the capacity tier for this volume in the FabricPool aggregate, in bytes.
compaction_footprint_data_reduction	integer	Savings achieved due to Data Compaction, in bytes.
cross_volume_dedupe_metafiles_footprint	integer	Cross volume deduplication metadata footprint, in bytes.
cross_volume_dedupe_metafiles_temporary_footprint	integer	Cross volume temporary deduplication metadata footprint, in bytes.
dedupe_metafiles_footprint	integer	Deduplication metadata footprint, in bytes.
dedupe_metafiles_temporary_footprint	integer	Temporary deduplication metadata footprint, in bytes.
delayed_free_footprint	integer	Delayed free blocks footprint, in bytes.

Name	Type	Description
effective_total_footprint	integer	Volume footprint after efficiency savings, in bytes. effective total footprint represents total footprint after deducting auto adaptive compression and compaction savings. effective-footprint includes aggregate metadata used by volume.
expected_available	integer	Size that should be available for the volume, irrespective of available size in the aggregate, in bytes.
file_operation_metadata	integer	File operation metadata footprint, in bytes.
filesystem_size	integer	Total usable size of the volume, in bytes.
filesystem_size_fixed	boolean	Specifies whether the file system is to remain of the same size when set to true or to grow when set to false. This option is automatically set to true when a volume becomes SnapMirrored.
footprint	integer	Data used for this volume in the aggregate, in bytes.
fractional_reserve	integer	Used to change the amount of space reserved for overwrites of reserved objects in a volume.
full_threshold_percent	integer	Volume full threshold percentage at which EMS warnings can be sent.
is_used_stale	boolean	Specifies if the virtual space used is stale.
large_size_enabled	boolean	Indicates if the support for large FlexVol volumes and large files is enabled on this volume. When configured to true, FlexVol volume size can reach up to 300TB and single file size can reach 128TB.

Name	Type	Description
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for the FlexVol volume or for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
nearly_full_threshold_percent	integer	Volume nearly full threshold percentage at which EMS warnings can be sent.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
overwrite_reserve	integer	Reserved space for overwrites, in bytes.
overwrite_reserve_used	integer	Overwrite logical reserve space used, in bytes.
percent_used	integer	Percentage of the volume size that is used.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
physical_used	integer	Size that is physically used in the volume, in bytes. Physical used is effective total footprint which is equivalent to total footprint after deducting auto adaptive compression and compaction savings. Physical-used also includes aggregate metadata used by volume.
physical_used_percent	integer	Size that is physically used in the volume, as a percentage.

Name	Type	Description
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
size_available_for_snapshots	integer	Available space for snapshots from snap-reserve, in bytes.
snapmirror_destination_footprint	integer	SnapMirror destination footprint, in bytes.
snapshot	snapshot	
snapshot_reserve_unusable	integer	Snapshot reserve that is not available for snapshot creation, in bytes.
snapshot_spill	integer	Space used by the snapshot copies beyond the snap-reserve, in bytes.
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
user_data	integer	User data, in bytes.
volume_guarantee_footprint	integer	Space reserved for future writes in the volume, in bytes.

access

Raw count and latency data for access operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

audit

Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

dir

Raw count and latency data for directory-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

file

Raw count and latency data for file-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

other

Raw count and latency data for create operations on objects other than files, directories and symlinks.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

symlink

Raw count and latency data for symlink-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

create

Raw count and latency data for create operations.

Name	Type	Description
dir	dir	Raw count and latency data for directory-create operations.
file	file	Raw count and latency data for file-create operations.
other	other	Raw count and latency data for create operations on objects other than files, directories and symlinks.
symlink	symlink	Raw count and latency data for symlink-create operations.

getattr

Raw count and latency data for getattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

link

Raw count and latency data for link operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lock

Raw count and latency data for lock operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lookup

Raw count and latency data for lookup operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

open

Raw count and latency data for open operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

read

Raw count and latency data for read operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

readdir

Raw count and latency data for readdir operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

readlink

Raw count and latency data for readlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

rename

Raw count and latency data for rename operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

setattr

Raw count and latency data for setattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

unlink

Raw count and latency data for unlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

watch

Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

write

Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

cifs_ops_raw

Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

Name	Type	Description
access	access	Raw count and latency data for access operations.
audit	audit	Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.
create	create	Raw count and latency data for create operations.
getattr	getattr	Raw count and latency data for getattr operations.
link	link	Raw count and latency data for link operations.
lock	lock	Raw count and latency data for lock operations.
lookup	lookup	Raw count and latency data for lookup operations.
open	open	Raw count and latency data for open operations.
read	read	Raw count and latency data for read operations, including histograms categorizing operations by size and latency.
readdir	readdir	Raw count and latency data for readdir operations.
readlink	readlink	Raw count and latency data for readlink operations.
rename	rename	Raw count and latency data for rename operations.
setattr	setattr	Raw count and latency data for setattr operations.
unlink	unlink	Raw count and latency data for unlink operations.

Name	Type	Description
watch	watch	Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.
write	write	Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache_raw

Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
cache_miss_blocks	integer	Blocks retrieved from origin in case of a cache miss. This can be divided by the raw client_requested_blocks and multiplied by 100 to calculate the cache miss percentage.
client_requested_blocks	integer	Total blocks requested by the client.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

nfs_ops_raw

Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

Name	Type	Description
access	access	Raw count and latency data for access operations.
audit	audit	Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.
create	create	Raw count and latency data for create operations.
getattr	getattr	Raw count and latency data for getattr operations.

Name	Type	Description
link	link	Raw count and latency data for link operations.
lock	lock	Raw count and latency data for lock operations.
lookup	lookup	Raw count and latency data for lookup operations.
open	open	Raw count and latency data for open operations.
read	read	Raw count and latency data for read operations, including histograms categorizing operations by size and latency.
readdir	readdir	Raw count and latency data for readdir operations.
readlink	readlink	Raw count and latency data for readlink operations.
rename	rename	Raw count and latency data for rename operations.
setattr	setattr	Raw count and latency data for setattr operations.
unlink	unlink	Raw count and latency data for unlink operations.
watch	watch	Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.
write	write	Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
cifs_ops_raw	cifs_ops_raw	Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
cloud	cloud	These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.
flexcache_raw	flexcache_raw	Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
nfs_ops_raw	nfs_ops_raw	Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM containing the volume. Required on POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tiering

Name	Type	Description
min_cooling_days	integer	This parameter specifies the minimum number of days that user data blocks of the volume must be cooled before they can be considered cold and tiered out to the cloud tier. Note that this parameter is only used for tiering purposes and does not affect the reporting of inactive data. The value specified should be greater than the frequency with which applications in the volume shift between different sets of data. This parameter cannot be set when volume tiering policy is either "none" or "all". The default value of this parameter depends on the volume's tiering policy. See the tiering policy section of this documentation for corresponding default values. If the tiering policy on the volume gets changed, then this parameter will be reset to the default value corresponding to the new tiering policy.
object_tags	array[string]	This parameter specifies tags of a volume for objects stored on a FabricPool-enabled aggregate. Each tag is a key,value pair and should be in the format "key=value".

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ This policy allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ This policy allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy is 31 days.

volume

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
access_time_enabled	boolean	Indicates whether or not access time updates are enabled on the volume.

Name	Type	Description
activity_tracking	activity_tracking	
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.
create_time	string	Creation time of the volume. This field is generated when the volume is created.
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	

Name	Type	Description
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.

Name	Type	Description
language	string	Language encoding setting for volume. If no language is specified, the volume inherits its SVM language encoding setting.
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
metric	metric	Performance numbers, such as IOPS, latency and throughput.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.
qos	qos	QoS information

Name	Type	Description
queue_for_encryption	boolean	Specifies whether the volume is queued for encryption.
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.

Name	Type	Description
snapshot_count	integer	Number of snapshots in the volume.
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
svm	svm	SVM containing the volume. Required on POST.
tiering	tiering	
type	string	Type of the volume. rw ‐ read-write volume. dp ‐ data-protection volume. ls ‐ load-sharing <code>dp</code> volume. Valid in GET.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a volume on an SVM and storage aggregates

POST `/storage/volumes`

Introduced In: 9.6

Creates a volume on a specified SVM and storage aggregates.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the volume.
- `name` - Name of the volume.
- `aggregates.name` or `aggregates.uuid` - Existing aggregates in which to create the volume.

Default property values

- `state` - *online*
- `size` - *20MB*
- `style` - *flexvol*
- `type` - *rw*
- `encryption.enabled` - *false*
- `snapshot_policy.name` - *default*
- `guarantee.type` - *volume*
- `anti_ransomware.state` - *default*

Related ONTAP commands

- `volume create`
- `volume clone create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
activity_tracking	activity_tracking	

Name	Type	Description
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
constituents_per_aggregate	integer	Specifies the number of times to iterate over the aggregates listed with the "aggregates.name" or "aggregates.uuid" when creating or expanding a FlexGroup volume. If a volume is being created on a single aggregate, the system creates a flexible volume if the "constituents_per_aggregate" field is not specified, or a FlexGroup volume if it is specified. If a volume is being created on multiple aggregates, the system always creates a FlexGroup volume. If a volume is being created on multiple aggregates and the "constituents_per_aggregate" field is not specified, the default value of the "constituents_per_aggregate" field is 4. The root constituent of a FlexGroup volume is always placed on the first aggregate in the list, unless 'optimize_aggregates' is specified as 'true'. If the "aggregates.name" or "aggregates.uuid" is specified in a PATCH request to expand an existing FlexGroup volume, the default value of the "constituents_per_aggregate" field is 1. The volume expand operation is only supported on FlexGroup volumes.
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.
create_time	string	Creation time of the volume. This field is generated when the volume is created.

Name	Type	Description
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.
language	string	Language encoding setting for volume. If no language is specified, the volume inherits its SVM language encoding setting.

Name	Type	Description
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.
optimize_aggregates	boolean	Specifies whether to create the constituents of the FlexGroup volume on the aggregates specified in the order they are specified, or whether the system should optimize the ordering of the aggregates. If this value is 'true', the system optimizes the ordering of the aggregates specified. If this value is false, the order of the aggregates is unchanged. The default value is 'false'.

Name	Type	Description
qos	qos	QoS information
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.

Name	Type	Description
snapshot_count	integer	Number of snapshots in the volume.
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
svm	svm	SVM containing the volume. Required on POST.
tiering	tiering	
type	string	Type of the volume. rw ‐ read-write volume. dp ‐ data-protection volume. ls ‐ load-sharing <code>dp</code> volume. Valid in GET.

Name	Type	Description
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning a FlexGroup without specifying "aggregates.name" or "aggregates.uuid". Only mirrored aggregates are used if this parameter is set to 'true' and only unmirrored aggregates are used if this parameter is set to 'false'. Aggregate level mirroring for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. The default value is 'true' for a MetroCluster configuration and is 'false' for a non-MetroCluster configuration.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "access_time_enabled": true,
  "activity_tracking": {
    "state": "string",
    "unsupported_reason": {
      "code": "124518405",
      "message": "Volume activity tracking cannot be enabled on volumes
that contain LUNs."
    }
  },
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "aggressive_readahead_mode": "string",
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
```

```
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
```

```
    "bytes_used": 15436648448,
    "file_count": 21134,
    "files_scanned": 43002,
    "initialization": {
      "state": "string"
    },
    "report_time": "2024-11-06 13:57:15 -0500",
    "scan_progress": 17,
    "scan_throttle_reason": {
      "arguments": [
        "string"
      ],
      "code": "6739881",
      "message": "The file system analytics scan running on volume
\"fsavol2\" in SVM \"vs2\" has slowed down on node \"my_node\". Reason:
Computing resources are being used by higher priority workloads."
    },
    "state": "string",
    "subdir_count": 35,
    "total_files": 101890,
    "unsupported_reason": {
      "code": "111411207",
      "message": "File system analytics cannot be enabled on volumes
that contain LUNs."
    }
  },
  "anti_ransomware": {
    "attack_detected_by": "string",
    "attack_detection_parameters": {
      "file_create_op_rate_surge_notify_percent": 100
    },
    "attack_probability": "string",
    "attack_reports": [
      {
        "time": "2021-06-01 11:06:41 -0400"
      }
    ],
    "block_device_detection_start_time": "string",
    "block_device_detection_state": "string",
    "dry_run_start_time": "string",
    "space": {
      "snapshot_count": 0,
      "used": 0,
      "used_by_logs": 0,
      "used_by_snapshots": 0
    },
```

```
    "state": "string",
    "surge_usage": {
      "file_create_peak_rate_per_minute": 10,
      "file_delete_peak_rate_per_minute": 50,
      "file_rename_peak_rate_per_minute": 30,
      "high_entropy_data_write_peak_percent": 30,
      "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
      "time": "2021-12-01 12:46:20 -0500"
    },
    "suspect_files": [
      {
        "count": 0,
        "entropy": "string",
        "format": "string"
      }
    ],
    "typical_usage": {
      "file_create_peak_rate_per_minute": 50,
      "file_delete_peak_rate_per_minute": 10,
      "file_rename_peak_rate_per_minute": 5,
      "high_entropy_data_write_peak_percent": 10,
      "high_entropy_data_write_peak_rate_kb_per_minute": 1200
    },
    "workload": {
      "file_extension_types_count": 3,
      "file_extensions_observed": [
        "pdf",
        "jpeg",
        "txt"
      ],
      "historical_statistics": {
        "file_create_peak_rate_per_minute": 50,
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      },
      "newly_observed_file_extensions": [
        {
          "count": [
            20
          ],
          "name": [
            "lockile"
          ]
        }
```

```
      ],
      "surge_statistics": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "time": "2021-12-01 12:46:20 -0500"
      },
      "surge_usage": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "newly_observed_file_extensions": [
          {
            "count": [
              20
            ],
            "name": [
              "lockile"
            ]
          }
        ],
        "time": "2021-12-01 12:46:20 -0500"
      },
      "typical_usage": {
        "file_create_peak_rate_per_minute": 50,
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      }
    }
  },
  "application": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "asynchronous_directory_delete": {
    "trash_bin": "string"
  },
  "autosize": {
    "mode": "string"
  },
```

```
  "clone": {
    "inherited_physical_used": 0,
    "inherited_savings": 0,
    "parent_snapshot": {
      "name": "this_snapshot",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "parent_svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "parent_volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    },
    "split_complete_percent": 0,
    "split_estimate": 0,
    "split_initiated": true
  },
  "cloud_retrieval_policy": "string",
  "comment": "string",
  "consistency_group": {
    "name": "consistency_group_1",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "constituents": [
    {
      "aggregates": {
        "name": "string",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      },
      "movement": {
        "cutover_window": 30,
        "destination_aggregate": {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "percent_complete": 0,
        "state": "replicating",
        "tiering_policy": "string"
      },
      "name": "string",
      "node": {
        "name": "string",
        "uuid": "string"
      },
```

```
      "space": {
        "available": 0,
        "block_storage_inactive_user_data": 0,
        "capacity_tier_footprint": 0,
        "footprint": 0,
        "local_tier_footprint": 0,
        "logical_space": {
          "available": 0,
          "used_by_afs": 0
        },
        "max_size": "string",
        "metadata": 0,
        "over_provisioned": 0,
        "performance_tier_footprint": 0,
        "snapshot": {
          "used": 0
        },
        "total_footprint": 0,
        "total_metadata": 0,
        "total_metadata_footprint": 0,
        "used": 0
      }
    }
  ],
  "create_time": "2018-06-04 15:00:00 -0400",
  "efficiency": {
    "application_io_size": "string",
    "auto_state": "string",
    "compaction": "string",
    "compression": "string",
    "compression_type": "string",
    "cross_volume_dedupe": "string",
    "dedupe": "string",
    "idcs_scanner": {
      "mode": "string",
      "operation_state": "string",
      "status": "string",
      "threshold_inactive_time": "P14D"
    },
    "last_op_begin": "string",
    "last_op_end": "string",
    "last_op_err": "string",
    "last_op_size": 0,
    "last_op_state": "string",
    "op_state": "string",
    "policy": {
```

```
      "name": "string"
    },
    "progress": "string",
    "ratio": 0,
    "scanner": {
      "compression": true,
      "dedupe": true,
      "scan_old_data": true
    },
    "schedule": "string",
    "space_savings": {
      "compression": 0,
      "compression_percent": 0,
      "dedupe": 0,
      "dedupe_percent": 0,
      "dedupe_sharing": 0,
      "total": 0,
      "total_percent": 0
    },
    "state": "string",
    "storage_efficiency_mode": "string",
    "type": "string",
    "volume_path": "string"
  },
  "encryption": {
    "action": "string",
    "key_create_time": "2022-01-01 14:00:00 -0500",
    "key_id": "string",
    "key_manager_attribute": "CRN=v1:bluemix:public:containers-
kubernetes:us-south:a/asdfghjkl1234:asdfghjkl1234:worker:kubernetes-
asdfghjkl-worker1",
    "rekey": true,
    "state": "string",
    "status": {
      "code": "string",
      "message": "string"
    },
    "type": "string"
  },
  "files": {
    "inodefile_capacity": 0,
    "used": 0
  },
  "flash_pool": {
    "cache_eligibility": "string",
    "cache_retention_priority": "string",
```

```
      "caching_policy": "string"
    },
    "flexcache_endpoint_type": "string",
    "flexgroup": {
      "name": "my_flexgroup",
      "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
    },
    "granular_data_mode": "string",
    "guarantee": {
      "type": "string"
    },
    "language": "string",
    "movement": {
      "cutover_window": 30,
      "destination_aggregate": {
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "percent_complete": 0,
      "start_time": "2020-12-07 03:45:12 -0500",
      "state": "replicating",
      "tiering_policy": "string"
    },
    "name": "vol_cs_dept",
    "nas": {
      "export_policy": {
        "id": 100,
        "name": "default"
      },
      "junction_parent": {
        "name": "vs1_root",
        "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
      },
      "path": "/user/my_volume",
      "security_style": "string",
      "unix_permissions": 493
    },
    "nodes": [
      {
        "name": "string",
        "uuid": "string"
      }
    ],
    "qos": {
      "policy": {
        "max_throughput": [
```

```
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "min_throughput_iops": 2000,
      "min_throughput_mbps": 500,
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "queue_for_encryption": true,
  "quota": {
    "state": "string"
  },
  "rebalancing": {
    "data_moved": 0,
    "engine": {
      "movement": {
        "file_moves_started": 0,
        "last_error": {
          "code": 0,
          "destination": 0,
          "file_id": 0,
          "time": "2018-06-04 15:00:00 -0400"
        },
        "most_recent_start_time": "2018-06-04 15:00:00 -0400"
      },
      "scanner": {
        "blocks_scanned": 0,
        "blocks_skipped": {
          "efficiency_blocks": 0,
```

```
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        },
        "files_scanned": 0,
        "files_skipped": {
          "efficiency_blocks": 0,
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        }
      }
    },
    "exclude_snapshots": true,
    "imbalance_percent": 0,
    "imbalance_size": 0,
    "max_constituent_imbalance_percent": 0,
    "notices": [
      {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
```

```
      ],
      "runtime": "string",
      "stop_time": "string",
      "target_used": 0,
      "used_for_imbalance": 0
    },
    "scheduled_snapshot_naming_scheme": "string",
    "sizing_method": "string",
    "snaplock": {
      "append_mode_enabled": "",
      "autocommit_period": "P30M",
      "compliance_clock_time": "2018-06-04 15:00:00 -0400",
      "expiry_time": "Wed Sep  5 11:02:42 GMT 2018",
      "is_audit_log": 1,
      "litigation_count": 10,
      "privileged_delete": "enabled",
      "retention": {
        "default": "P30Y",
        "maximum": "P30Y",
        "minimum": "P30Y"
      },
      "type": "enterprise",
      "unspecified_retention_file_count": 10
    },
    "snapshot_count": 0,
    "snapshot_policy": {
      "name": "default",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "space": {
      "auto_adaptive_compression_footprint_data_reduction": 0,
      "available": 0,
      "block_storage_inactive_user_data": 0,
      "block_storage_inactive_user_data_percent": 0,
      "capacity_tier_footprint": 0,
      "capacity_tier_footprint_data_reduction": 0,
      "compaction_footprint_data_reduction": 0,
      "cross_volume_dedupe_metafiles_footprint": 0,
      "cross_volume_dedupe_metafiles_temporary_footprint": 0,
      "dedupe_metafiles_footprint": 0,
      "dedupe_metafiles_temporary_footprint": 0,
      "delayed_free_footprint": 0,
      "effective_total_footprint": 0,
      "file_operation_metadata": 0,
      "filesystem_size": 0,
      "footprint": 0,
```

```
    "local_tier_footprint": 0,
    "logical_space": {
      "available": 0,
      "used": 0,
      "used_by_afs": 0,
      "used_by_snapshots": 0,
      "used_percent": 0
    },
    "max_size": "string",
    "metadata": 0,
    "over_provisioned": 0,
    "overwrite_reserve": 0,
    "overwrite_reserve_used": 0,
    "percent_used": 0,
    "performance_tier_footprint": 0,
    "size_available_for_snapshots": 0,
    "snapmirror_destination_footprint": 0,
    "snapshot": {
      "reserve_available": 0,
      "reserve_size": 0,
      "space_used_percent": 0,
      "used": 0
    },
    "snapshot_reserve_unusable": 0,
    "snapshot_spill": 0,
    "total_footprint": 0,
    "total_metadata": 0,
    "total_metadata_footprint": 0,
    "used": 0,
    "user_data": 0,
    "volume_guarantee_footprint": 0
  },
  "state": "string",
  "status": [
    "string"
  ],
  "style": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tiering": {
    "object_tags": [
      "string"
    ],
    "policy": "string"
```

```
  },
  "type": "string",
  "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
460770	[Job "jobid"] Job failed.

Error Code	Description
524561	Unable to get the information for the specified SVM's root volume because of the specified reason.
524597	Failed to create the clone volume on the node.
524597	Failed to create clone volume on the node.
524601	Parent volume "name" not found.
524819	Failed to create the clone volume.
787140	One of "aggregates.uuid", "aggregates.name", or "style" must be provided.
787141	The specified "aggregates.name" and "aggregates.uuid" refer to different aggregates.
917508	The target aggregate could not be found.
917526	The volume name specified is a duplicate.
917534	The value specified for field "-size" is too small. Update the field "-size" with the minimum size allowed and retry.
917536	Job completed with specified error.
917551	Specified snapshot policy not found.
917597	Provisioning a volume on a root aggregate is not supported.
917775	Volume \"{0}:{1}\" is not online.
917829	Volume autosize grow threshold must be larger than autosize shrink threshold.
917831	Volume minimum autosize must be smaller than the maximum autosize.
917835	Maximum allowed snapshot.reserve_percent value during a volume creation is 90. Use PATCH to set it to a higher value after the volume has been created.
917886	Volume name is too long. It must be 203 characters or less.
917887	The first character of the volume name must be a letter or underscore.
918157	Node \"{0}\" in cluster \"{1}\" failed to allocate encryption resources. Wait a few minutes, and try the operation again. If the issue persists, reboot the node and try the operation again.

Error Code	Description
918162	Node \"{0}\" in cluster \"{1}\" is not reachable. Creation of the first encrypted volume requires encryption resources to be allocated on both node \"{2}\" and its HA partner node \"{0}\". Make sure that the node and its partner are healthy, and then try the operation again.
918191	Flexvol tiering min cooling days requires an effective cluster version of ONTAP 9.4 or later.
918194	Tiering min cooling days not supported for SVMDR.
918195	Tiering min cooling days not supported for non data volumes.
918196	Tiering min cooling days not allowed for the provided tiering policy.
918215	FlexGroup tiering min cooling days requires an effective cluster version of ONTAP 9.5 or later.
918232	The specified volume identifier fields must be provided.
918233	The target field cannot be specified for this operation.
918236	The specified "parent_volume.uuid" and "parent_volume.name" do not refer to the same volume.
918240	The target style is an invalid volume style.
918241	The target style is an unsupported volume style for volume creation.
918242	When creating a flexible volume, exactly one aggregate must be specified via either "aggregates.name" or "aggregates.uuid".
918243	The specified snapshot UUID is not correct for the specified snapshot name.
918244	Invalid "volume.type" for clone volume.
918247	Specifying a value is not valid for a volume FlexClone creation.
918252	"nas.path" is invalid.
918271	Failed to get valid export policy.
918290	cloud retrieval policy requires an effective cluster version of 9.8 or later.
918291	Invalid volume cloud retrieval policy for the provided tiering policy.
918292	cloud retrieval policy not supported for non data volume.

Error Code	Description
918334	Cache cloud retrieval policy requires an effective cluster version of 9.14 or later.
918521	The volume maximum autosize must be smaller than or equal to the maximum volume size.
918524	Volume minimum autosize must be less than or equal to the current volume size.
918652	"error" is an invalid value for field "-state". Valid values are "online", "offline" and "restricted".
918701	The specified operation on the volume endpoint is not supported on this platform.
1638400	Failed to retrieve snapshot information.
1638587	The specified snapshot_policy.name and snapshot_policy.uuid refer to different snapshot policies.
1638593	Operation failed because "snapdb" is disabled.
1638624	Internal error. Failed to lookup snapshot tags for \"{0}\".
2621462	The target SVM does not exist.
2621706	The specified "svm.uuid" and "svm.name" do not refer to the same SVM.
2621707	No SVM was specified. Either "svm.name" or "svm.uuid" must be supplied.
6881654	Disabling storage efficiency features is not allowed on this platform.
13107245	The specified FlexGroup volume layout exceeds the maximum number of volumes on node.
13107307	specifying this parameter when creating a flexible volume is not supported.
13107326	Request to provision FlexGroup volume "name" failed because the requested size is greater than the maximum size.
13107341	At least one valid aggregate assigned to SVM \"{0}\" with sufficient space and a homogeneous storage type is required on every node on the cluster to provision a FlexGroup volume.
13107349	Operation is only supported on flexible volumes and FlexGroup volumes.
13107405	Another volume is currently being created with the name "name" in SVM "svm.name".
13107413	Creating a FlexGroup volume is not supported on All SAN Arrays and systems that support large LUNs.

Error Code	Description
13109258	Cannot enable granular data on volume "name" in Vserver "svm.name". This setting can only be enabled on FlexGroups.
13109260	Failed to enable granular data on the volume.
13109290	Specifying the "aggregates" parameter on this platform requires that the "constituents_per_aggregate" parameter is also specified. Instead, consider using the "constituent_count" parameter to specify how many constituents to create, and the system will automatically select where to place them.
13109291	Specifying the "constituents_per_aggregate" parameter requires that the "aggregates" parameter is also specified.
13565983	A value of zero is not supported for \"-uid\" or \"-gid\".
65537463	Volume encryption keys (VEK) cannot be created or deleted for data Vserver \"{0}\". External key management has been configured for data Vserver \"{0}\" but ONTAP is not able to encrypt or decrypt with the key manager. Resolve the external key manager key issues at the key manager’s portal before creating any new encrypted volumes.
65537529	Encrypted volumes cannot be created or deleted for Vserver \"{0}\" as a rekey operation for the vserver is in progress. Try creating the encrypted volume again after some time. If the problem persists, run the rekey operation again after some time.
65537600	Encrypted volumes cannot be created or deleted for Vserver \"{0}\" while the enabled keystore configuration is being switched. If a previous attempt to switch the keystore configuration failed, or was interrupted, the system will continue to prevent encrypted volume creation for Vserver \"{0}\". Use the \"security key-manager keystore enable\" command to re-run and complete the operation.
65539430	Cannot create or delete volumes on Vserver \"{0}\" while the keystore is being initialized. Wait until the keystore is in the active state, and rerun the volume operation.
65539431	Cannot create or delete volumes on Vserver \"{0}\" while the keystore is being disabled.
111411203	Failed to retrieve the volume file system analytics report on the volume.
111411204	Internal error. Failed to retrieve the volume file system analytics report on the volume.

Error Code	Description
111411205	File system analytics requires an effective cluster version of 9.8 or later.
111411206	The specified "analytics.state" is invalid.
111411207	File system analytics cannot be enabled on volumes that contain LUNs.
111411207	Volume file system analytics is not supported on volumes that contain LUNs.
111411209	Volume file system analytics is not supported on FlexCache volumes.
111411210	Volume file system analytics is not supported on audit staging volumes.
111411211	Volume file system analytics is not supported on object store server volumes.
111411212	Volume file system analytics is not supported on SnapMirror destination volumes.
111411215	Internal error. Volume file system analytics report timed out for volume volume.name in SVM svm.name.
111411216	Enabling or disabling volume file system analytics is not supported on individual FlexGroup constituents.
111411217	Volume file system analytics is not supported on SnapLock volumes.
111411230	Volume file system analytics is not supported on volumes that contain NVMe namespaces.
111411241	Volume file system analytics is not supported on All SAN Array clusters.
111411252	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Ensure there is at least "space.available_percent`" available space in the volume, then try the operation again.
111411253	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Ensure there is at least "space.available_percent" available space in all constituents of the FlexGroup, then try the operation again."
111411257	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Increase the volume size to "size", then try the operation again."
111412203	Volume file system analytics is not enabled on the volume.

Error Code	Description
111415208	Cannot create a clone of volume "name" in SVM "svm.name" because the file system analytics state is not set to "off" or "on". Use REST API GET method "/api/storage/volumes/uuid?fields=analytics.state" to check the analytics state.
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
196608308	Node \"{0}\" in cluster \"{1}\" is not reachable. Creation of the first NAE (NetApp Aggregate Encryption) aggregate requires encryption resources to be allocated on both node \"{2}\" and its HA partner node \"{0}\". Make sure that the node and its partner are healthy, and then try the operation again.
196608399	One or more nodes in cluster \"{0}\" are not reachable. Creation of the first NAE (NetApp Aggregate Encryption) aggregate requires encryption resources to be allocated on all nodes in DR group \"{1}\". Ensure that all the nodes are healthy and then try the operation again.
196608400	One or more nodes in cluster \"{0}\" are not reachable. Creation of the first encrypted volume requires encryption resources to be allocated on all nodes in DR group \"{1}\". Ensure that all the nodes are healthy and then try the operation again.
196608401	Node \"{0}\" in cluster \"{1}\" is not reachable. Creation of the first NAE (NetApp Aggregate Encryption) aggregate requires encryption resources to be allocated on node \"{0}\". Make sure that the node is healthy, and then try the operation again.

Error Code	Description
196608402	Node \"{0}\" in cluster \"{1}\" is not reachable. Creation of the first encrypted volume requires encryption resources to be allocated on node \"{0}\". Make sure that the node is healthy, and then try the operation again.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

unsupported_reason

Name	Type	Description
code	string	If volume activity tracking is not supported on the volume, this field provides an appropriate error code.
message	string	If volume activity tracking is not supported on the volume, this field provides an error message detailing why this is the case.

activity_tracking

Name	Type	Description
state	string	Activity tracking state of the volume. If this value is "on", ONTAP collects top metrics information for the volume in real time. There is a slight impact to I/O performance in order to collect this information. If this value is "off", no activity tracking information is collected or available to view. • enum: ["off", "on"] • Introduced in: 9.10 • x-nullable: true
supported	boolean	This field indicates whether or not volume activity tracking is supported on the volume. If volume activity tracking is not supported, the reason why is provided in the "activity_tracking.unsupported_reason" field.

Name	Type	Description
unsupported_reason	unsupported_reason	

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_modified_time

File system analytics information, broken down by date of last modification with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

initialization

Name	Type	Description
state	string	State of the analytics file system scan.

scan_throttle_reason

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	string	Warning code indicating why scanner throttling is reported.
message	string	A message that provides details for scan throttling.

unsupported_reason

Name	Type	Description
code	string	If file system analytics is not supported on the volume, this field provides the error code explaining why.

Name	Type	Description
message	string	If file system analytics is not supported on the volume, this field provides the error message explaining why.

analytics

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk.
file_count	integer	Number of descendants.
files_scanned	integer	Number of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
initialization	initialization	
report_time	string	Time of data collection.
scan_progress	integer	Percentage of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
scan_throttle_reason	scan_throttle_reason	

Name	Type	Description
state	string	File system analytics state of the volume. If this value is "on", ONTAP collects extra file system analytics information for all directories on the volume. There will be a slight impact to I/O performance to collect this information. If this value is "off", file system analytics information is not collected and not available to be viewed. If this value is "initializing", that means file system analytics was recently turned on, and the initialization scan to gather information for all existing files and directories is currently running. If this value is "initialization_paused", this means that the initialization scan is currently paused. If this value is 'unknown', this means that there was an internal error when determining the file system analytics state for the volume. • enum: ["unknown", "initializing", "initialization_paused", "off", "on"] • Introduced in: 9.8 • x-nullable: true
subdir_count	integer	Number of sub-directories.
supported	boolean	This field indicates whether or not file system analytics is supported on the volume. If file system analytics is not supported, the reason will be specified in the "analytics.unsupported_reason" field.
total_files	integer	Total number of files in the volume that the file system analytics initialization scan will process. Only returned when the state is `initializing`.
unsupported_reason	unsupported_reason	

anti_ransomware_volume_attack_detection_parameters

Name	Type	Description
based_on_file_create_op_rate	boolean	Specifies whether attack detection is based on the file create operations rate. This parameter is valid only for NAS volumes.
based_on_file_delete_op_rate	boolean	Specifies whether attack detection is based on the file delete operations rate. This parameter is valid only for NAS volumes.
based_on_file_rename_op_rate	boolean	Specifies whether attack detection is based on the file rename operations rate. This parameter is valid only for NAS volumes.
based_on_high_entropy_data_rate	boolean	Specifies whether a high entropy data rate should be considered for attack detection.
based_on_never_seen_before_file_extension	boolean	Specifies whether file extensions never seen before should be considered for attack detection.
block_device_auto_learned_encryption_threshold	integer	Specifies the block device auto learned encryption threshold.
file_create_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file create rate up to which it is considered normal behavior.
file_delete_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file delete rate up to which it is considered normal behavior.
file_rename_op_rate_surge_notify_percent	integer	Specifies the percent of surge in the file rename rate up to which it is considered normal behavior.

Name	Type	Description
high_entropy_data_surge_notify_percent	integer	Specifies the percentage of surge in high entropy data up to which it is considered as normal behavior. For example, if the usual high entropy data rate in the volume is 5% and if this parameter is set to 100%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 10% at any time. Similarly, if this parameter is set to 400%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 25%, and so on.
never_seen_before_file_extension_count_notify_threshold	integer	Specifies the number of files found with a never seen before file extension up to which it is considered normal behavior.
never_seen_before_file_extension_duration_in_hours	integer	Specifies the duration within which the specified number of files found with never seen before file extensions is considered normal behavior.
relaxing_popular_file_extensions	boolean	Specifies whether popular file extensions should be relaxed from being treated as a suspect for the attack. Some popular file extensions are .txt, .pdf, and so on.

anti_ransomware_attack_report

Name	Type	Description
_links	_links	
time	string	Timestamp at which ransomware attack is observed.

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

space

Name	Type	Description
snapshot_count	integer	Total number of Anti-ransomware backup snapshots.
used	integer	Total space in bytes used by the Anti-ransomware feature.
used_by_logs	integer	Space in bytes used by the Anti-ransomware analytics logs.
used_by_snapshots	integer	Space in bytes used by the Anti-ransomware backup snapshots.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

suspect_files

Name	Type	Description
count	integer	Total number of `suspect_files.format` files observed by the Anti-ransomware analytics engine on the volume.
entropy	string	Indicates the entropy level of this file type.
format	string	File formats observed by the Anti-ransomware analytics engine on the volume.

typical_usage

Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

historical_statistics

Typical usage values of volume workload.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

newly_observed_file_extensions

Name	Type	Description
count	integer	Count of newly observed file extensions.
name	string	Name of the newly observed file extension.

surge_statistics

Usage values of the volume’s workload during surge.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
time	string	Timestamp at which the first surge in the volume's workload is observed.

anti_ransomware_volume_workload

Name	Type	Description
file_extension_types_count	integer	Count of types of file extensions observed in the volume.
file_extensions_observed	array[string]	File extensions observed in the volume.
historical_statistics	historical_statistics	Typical usage values of volume workload.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
surge_statistics	surge_statistics	Usage values of the volume's workload during surge.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

anti_ransomware

Anti-ransomware related information of the volume.

Name	Type	Description
attack_detected_by	string	This field specifies whether the attack was reported by `File Analysis` or `Encrypted data percentage analysis`.
attack_detection_parameters	anti_ransomware_volume_attack_detection_parameters	
attack_probability	string	Probability of a ransomware attack. `none` No suspected ransomware activity. `low` Minimally suspected ransomware activity. `moderate` Moderately suspected ransomware activity. `high` Significantly suspected ransomware activity.
attack_reports	array[anti_ransomware_attack_report]	
block_device_detection_start_time	string	This field specifies the block device evaluation start time.
block_device_detection_state	string	This field specifies the block device attack detection status. `evaluation_period` Attack detection is currently in its evaluation phase. `active_unsuitable_workload` Attack detection is active, but the current workload is not suitable for Anti-ransomware protection. `active_suitable_workload` Attack detection is active, and the current workload is appropriate for Anti-ransomware protection.
dry_run_start_time	string	Time when Anti-ransomware monitoring `state` is set to dry-run value for starting evaluation mode.
event_log	event_log	
space	space	

Name	Type	Description
state	string	Anti-ransomware state. `disabled` Anti-ransomware monitoring is disabled on the volume. This is the default state in a POST operation. `disable_in_progress` Anti-ransomware monitoring is being disabled and a cleanup operation is in effect. Valid in GET operation. `dry_run` Anti-ransomware monitoring is enabled in the evaluation mode. `enabled` Anti-ransomware monitoring is active on the volume. `paused` Anti-ransomware monitoring is paused on the volume. `enable_paused` Anti-ransomware monitoring is paused on the volume from its earlier enabled state. Valid in GET operation. `dry_run_paused` Anti-ransomware monitoring is paused on the volume from its earlier dry_run state. Valid in GET operation. For POST, the valid Anti-ransomware states are only `disabled`, `enabled` and `dry_run`, whereas for PATCH, `paused` is also valid along with the three valid states for POST.
surge_as_normal	boolean	Indicates whether or not to set the surge values as historical values. This field is no longer supported. Use update_baseline_from_surge instead.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
suspect_files	array[suspect_files]	

Name	Type	Description
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.
update_baseline_from_surge	boolean	Sets the observed surge value as the new baseline on a volume.
workload	anti_ransomware_volume_workload	

application

Name	Type	Description
name	string	Name of the application to which the volume belongs. Available only when the volume is part of an application.
uuid	string	UUID of the application to which the volume belongs. Available only when the volume is part of an application.

asynchronous_directory_delete

Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.

Name	Type	Description
enabled	boolean	Specifies whether asynchronous directory delete from the client is enabled on the volume.
trash_bin	string	Name of the trash bin directory. If no "trash_bin" property is specified when enabling, the default trash bin name, "._ontaptrashbin", is used.

autosize

Name	Type	Description
grow_threshold	integer	Used space threshold size, in percentage, for the automatic growth of the volume. When the amount of used space in the volume becomes greater than this threshold, the volume automatically grows unless it has reached the maximum size. The volume grows when 'space.used' is greater than this percent of 'space.size'. The 'grow_threshold' size cannot be less than or equal to the 'shrink_threshold' size..
maximum	integer	Maximum size in bytes up to which a volume grows automatically. This size cannot be less than the current volume size, or less than or equal to the minimum size of volume.
minimum	integer	Minimum size in bytes up to which the volume shrinks automatically. This size cannot be greater than or equal to the maximum size of volume.
mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows when the amount of used space is above the 'grow_threshold' value. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.

Name	Type	Description
shrink_threshold	integer	Used space threshold size, in percentage, for the automatic shrinkage of the volume. When the amount of used space in the volume drops below this threshold, the volume automatically shrinks unless it has reached the minimum size. The volume shrinks when the 'space.used' is less than the 'shrink_threshold' percent of 'space.size'. The 'shrink_threshold' size cannot be greater than or equal to the 'grow_threshold' size.

snapshot_reference

Name	Type	Description
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

parent_volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

clone

Name	Type	Description
has_flexclone	boolean	Specifies whether this volume is a parent of any FlexClone volume.
inherited_physical_used	integer	Inherited physical used from the clone's base snapshot.
inherited_savings	integer	Inherited savings from the clone's base snapshot.
is_flexclone	boolean	Specifies if this volume is a normal FlexVol volume or FlexClone volume. This field needs to be set when creating a FlexClone volume. Valid in POST.
parent_snapshot	snapshot_reference	
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
parent_volume	parent_volume	
split_complete_percent	integer	Percentage of FlexClone volume blocks split from its parent volume.
split_estimate	integer	Space required by the containing-aggregate to split the FlexClone volume.

consistency_group

Consistency group the volume is part of.

Name	Type	Description
name	string	The name of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.
uuid	string	The UUID of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.

aggregates

Name	Type	Description
name	string	Name of the aggregate hosting the FlexGroup volume constituent.
uuid	string	Unique identifier for the aggregate.

destination_aggregate

Aggregate

Name	Type	Description
name	string	
uuid	string	

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

node

Name	Type	Description
name	string	List of the node names hosting the FlexGroup volume constituent.
uuid	string	List of the node UUIDs hosting the FlexGroup volume constituent.

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.

snapshot

Name	Type	Description
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.

Name	Type	Description
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
footprint	integer	Data used for this volume in the aggregate, in bytes.
large_size_enabled	boolean	Specifies whether the support for large volumes and large files is enabled on the volume.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
snapshot	snapshot	

Name	Type	Description
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
used_percent	integer	The virtual space used (includes volume reserves) before storage efficiency, as a percent.

constituents

Name	Type	Description
aggregates	aggregates	
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.
name	string	FlexGroup volume constituent name.
node	node	
space	space	

idcs_scanner

Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.

Name	Type	Description
enabled	boolean	Specifies the administrative state of the inactive data compression scanner. Disabling inactive data compression is not allowed on Capacity optimized Flash with QAT supported platforms.
inactive_days	integer	Data blocks older than, or equal to, 'inactive_days' are picked up by the inactive data compression scanner. Valid for PATCH only. Only applicable when 'operation_state' set to 'active'.
mode	string	Specifies the mode of inactive data compression scanner. Valid for PATCH and GET.
operation_state	string	Specifies the operational state of the inactive data compression scanner. VALID for PATCH and GET. Valid options for PATCH are "idle" and "active".
status	string	Status of last inactive data compression scan on the volume.
threshold_inactive_time	string	Time interval after which inactive data compression is automatically triggered. The value is in days and is represented in the ISO-8601 format "P<num>D", for example "P3D" represents a duration of 3 days. This field is not supported on QAT supported platforms.</num>

policy

Name	Type	Description
name	string	Specifies the name of the efficiency policy. The "inline-only" and "none" policies are not supported on Capacity optimized Flash with QAT supported platform.

scanner

space_savings

Name	Type	Description
compression	integer	Total disk space that is saved by compressing blocks on the referenced file system, in bytes.
compression_percent	integer	Percentage of total disk space that is saved by compressing blocks on the referenced file system.
dedupe	integer	Total disk space that is saved by deduplication and file cloning, in bytes.
dedupe_percent	integer	Percentage of total disk space that is saved by deduplication and file cloning.
dedupe_sharing	integer	Total disk space that is shared due to deduplication and file cloning.
total	integer	Total disk space saved in the volume due to deduplication, compression and file cloning, in bytes.
total_percent	integer	Percentage of total disk space saved in the volume due to deduplication, compression and file cloning.

efficiency

Name	Type	Description
application_io_size	string	Block size to use by compression. 8k and auto are only allowed for POST. Only auto is supported on QAT supported platforms.

Name	Type	Description
auto_state	string	Automatic deduplication schedule volume state. auto ‐ Volumes with auto_state set to auto start post-process deduplication automatically. deprioritized ‐ Volumes with auto_state set to deprioritized do not start post-process deduplication automatically.
compaction	string	The system can be enabled/disabled compaction. inline ‐ Data will be compacted first and written to the volume. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compaction enabled and some are disabled.

Name	Type	Description
compression	string	The system can be enabled/disabled compression. Disabling compression is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be compressed first and written to the volume. background ‐ Data will be written to the volume and compressed later. both ‐ Inline compression compresses the data and write to the volume, background compression compresses only the blocks on which inline compression is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compression enabled and some are disabled. that On volumes with container compression enabled, background compression refers to inactive data compression scan enabled on the volume.
compression_type	string	Compression type to use by compression. Valid for PATCH and GET.

Name	Type	Description
cross_volume_dedupe	string	The system can be enabled/disabled cross volume dedupe. it can be enabled only when dedupe is enabled. Disabling cross volume dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be cross volume deduped first and written to the volume. background ‐ Data will be written to the volume and cross volume deduped later. both ‐ Inline cross volume dedupe dedupes the data and write to the volume, background cross volume dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are cross volume dedupe enabled and some are disabled.
dedupe	string	The system can be enabled/disabled dedupe. Disabling dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be deduped first and written to the volume. background ‐ Data will be written to the volume and deduped later. both ‐ Inline dedupe dedupes the data and write to the volume, background dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are dedupe enabled and some are disabled.
has_savings	boolean	When true, indicates that the volume contains shared(deduplication, file clones) or compressed data.

Name	Type	Description
idcs_scanner	idcs_scanner	Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.
last_op_begin	string	Last sis operation begin timestamp.
last_op_end	string	Last sis operation end timestamp.
last_op_err	string	Last sis operation error text.
last_op_size	integer	Last sis operation size.
last_op_state	string	Last sis operation state.
logging_enabled	boolean	When true, indicates that space savings for any newly-written data are being logged.
op_state	string	Sis status of the volume.
policy	policy	
progress	string	Sis progress of the volume.
ratio	number	Storage efficiency that does not include the savings provided by snapshots.
scanner	scanner	
schedule	string	Schedule associated with volume.
space_savings	space_savings	

Name	Type	Description

state	string	Storage efficiency state of the volume. Currently, this field supports POST/PATCH only for RW (Read-Write) volumes on FSx for ONTAP and Cloud Volumes ONTAP.
		 disabled ‐ All storage efficiency features are disabled.
		 mixed ‐ Read-only field for FlexGroup volumes, storage efficiency is enabled on certain constituents and disabled on others.
		 On FSx for ONTAP and Cloud Volumes ONTAP ‐
		   enabled ‐ All supported storage efficiency features for the volume are enabled.
		   custom ‐ Read-only field currently only supported for the FSx for ONTAP and Cloud Volumes ONTAP, user-defined storage efficiency features are enabled.
		 For other platforms ‐
		   enabled ‐ At least one storage efficiency feature for the volume is enabled.
		• enum: ["disabled", "enabled", "mixed", "custom"]
		• Introduced in: 9.9
		• x-nullable: true

storage_efficiency_mode	string	Storage efficiency mode used by volume. This parameter is supported only on AFF platforms. There is no difference between default and efficient modes on QAT supported platforms and auto adaptive compression is set irrespective of the modes.
type	string	Sis Type of the volume.
volume_path	string	Absolute volume path of the volume.

status

Name	Type	Description
code	string	Encryption progress message code.
message	string	Encryption progress message.

encryption

Name	Type	Description
action	string	This field can be used to pause an ongoing rekey or conversion operation or resume a paused rekey or conversion operation. Valid in PATCH. The following actions are supported for this field: conversion_pause ‐ Pause an encryption conversion operation currently in progress. conversion_resume ‐ Resume a paused encryption conversion operation. rekey_pause ‐ Pause an encryption rekey operation currently in progress. rekey_resume ‐ Resume a paused encryption rekey operation.
enabled	boolean	Creates an encrypted or an unencrypted volume. For POST, when set to 'true', a new key is generated and used to encrypt the given volume. In that case, the underlying SVM must be configured with the key manager. When set to 'false', the volume created will be unencrypted. For PATCH, when set to 'true', it encrypts an unencrypted volume. Specifying the parameter as 'false' in a PATCH operation for an encrypted volume is only supported when moving the volume to another aggregate.
key_create_time	string	Encryption key creation time of the volume.

Name	Type	Description
key_id	string	The key ID used for creating encrypted volume. A new key-id is generated for creating an encrypted volume. This key-id is associated with the generated key.
key_manager_attribute	string	Specifies an additional key manager attribute that is an identifier-value pair, separated by '='. For example, CRN=unique-value. This parameter is required when using the POST method and an IBM Key Lore key manager is configured on the SVM.
state	string	Volume encryption state. encrypted ‐ The volume is completely encrypted. encrypting ‐ Encryption operation is in progress. partial ‐ Some constituents are encrypted and some are not. Applicable only for FlexGroup volume. rekeying. Encryption of volume with a new key is in progress. unencrypted ‐ The volume is a plain-text one.
status	status	
type	string	Volume encryption type. none ‐ The volume is a plain-text one. volume ‐ The volume is encrypted with NVE (NetApp Volume Encryption). aggregate ‐ The volume is encrypted with NAE (NetApp Aggregate Encryption).

error_state

Name	Type	Description
has_bad_blocks	boolean	Indicates whether the volume has any corrupt data blocks. If the damaged data block is accessed, an IO error, such as EIO for NFS or STATUS_FILE_CORRUPT for CIFS, is returned.
is_inconsistent	boolean	Indicates whether the file system has any inconsistencies. true ‐ File system is inconsistent. false ‐ File system in not inconsistent.

files

Name	Type	Description
inodefile_capacity	integer	Number of inodes that can currently be stored on the volume for user-visible files. This number dynamically increases as more user-visible files are created.
maximum	integer	The maximum number of files (inodes) for user-visible data allowed on the volume. This value can be increased or decreased. Increasing the maximum number of files does not immediately cause additional disk space to be used to track files. Instead, as more files are created on the volume, the system dynamically increases the number of disk blocks that are used to track files. The space assigned to track files is never freed, and this value cannot be decreased below the current number of files that can be tracked within the assigned space for the volume. Valid in PATCH.
used	integer	Number of files (inodes) used for user-visible data permitted on the volume. This field is valid only when the volume is online.

flash_pool

Name	Type	Description
cache_eligibility	string	If this parameter is specified, the command displays information only about the volume or volumes with the specified Flash Pool caching attributes.
cache_retention_priority	string	If this parameter is specified, the command displays the volumes that match the specified cache retention priority policy. A cache retention priority defines how long the blocks of a volume will be cached in the Flash Pool once they become cold.
caching_policy	string	This optionally specifies the caching policy to apply to the volume. A caching policy defines how the system caches a volume's data in Flash Cache modules. If a caching policy is not assigned to a volume, the system uses the caching policy that is assigned to the containing SVM. If a caching policy is not assigned to the containing SVM, the system uses the default cluster-wide policy.

flexgroup

Name	Type	Description
name	string	Name of the FlexGroup volume that the constituent is part of.
uuid	string	Unique identifier for the FlexGroup volume that the constituent is part of.

guarantee

Name	Type	Description
honored	boolean	Is the space guarantee of this volume honored in the aggregate?

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes

hosted on FabricPools.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache

Performance number for FlexCache used to measure cache effectiveness.

Name	Type	Description
bandwidth_savings	integer	Bandwidth savings denoting the amount of data served locally by the cache, in bytes.
cache_miss_percent	integer	Cache miss percentage.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS, latency and throughput.

Name	Type	Description
cloud	cloud	Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes hosted on FabricPools.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
flexcache	flexcache	Performance number for FlexCache used to measure cache effectiveness.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.

Name	Type	Description
capacity_tier_optimized	boolean	Specifies whether this move should perform optimized volume move for the capacity tier, in which data in the capacity tier does not need to be copied over.
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.

Name	Type	Description
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
start_time	string	Start time of volume move.
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

export_policy

Export Policy

Name	Type	Description
id	integer	
name	string	

junction_parent

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.

Name	Type	Description
uuid	string	Unique identifier for the parent volume.

nas

Name	Type	Description
export_policy	export_policy	Export Policy
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ Unix-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write) and 1 (execute). First digit selects the set user ID(4), set group ID (2) and sticky (1) attributes. The second digit selects permission for the owner of the file; the third selects permissions for other users in the same group; the fourth for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group and other permissions are given (as in 755, representing the second, third and fourth dight), first digit is assumed to be zero.

nodes

Name	Type	Description
name	string	List of the node names hosting the volume.
uuid	string	List of the node UUIDs hosting the volume.

policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

QoS information

Name	Type	Description
policy	policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

quota

Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
enabled	boolean	This option is used to enable or disable the quota for the volume. This option is valid only in PATCH. Quotas are enabled for FlexVol volumes or FlexGroup volumes when the quota state is "on". Quotas are disabled for FlexVol volumes or FlexGroup volumes when the quota state is "off".
state	string	Quota state of the volume

last_error

Error information for the last failed file move on the constituent.

Name	Type	Description
code	integer	Error code of the last file move error on the constituent.

Name	Type	Description
destination	integer	DSID of the destination constituent of the last file move error on the constituent.
file_id	integer	File ID of the last file move error on the constituent.
time	string	Time of the last file move error on the constituent.

movement

Properties on this constituent related to file movement.

Name	Type	Description
file_moves_started	integer	Number of file moves started on this constituent.
last_error	last_error	Error information for the last failed file move on the constituent.
most_recent_start_time	string	Start time of the most recent file move on the constituent.

blocks_skipped

Number of blocks skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of blocks skipped by the scanner on this constituent because fast truncate is currently running on files.

Name	Type	Description
footprint_invalid	integer	Number of blocks skipped by the scanner on this constituent because of files with invalid space footprints.
in_snapshot	integer	Number of blocks skipped by the scanner on this constituent because of files in snapshots.
incompatible	integer	Number of blocks skipped by the scanner on this constituent because of incompatible files.
metadata	integer	Number of blocks skipped by the scanner on this constituent because of metadata files.
on_demand_destination	integer	Number of blocks skipped by the scanner on this constituent because of on demand destination files.
other	integer	Number of blocks skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of blocks skipped by the scanner on this constituent because of remote caches.
too_large	integer	Number of blocks skipped by the scanner on this constituent because of files that are larger than rebalancing.max_file_size.
too_small	integer	Number of blocks skipped by the scanner on this constituent because of files that are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of blocks skipped by the scanner on this constituent because of files fenced for write operations.

files_skipped

Number of files skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of files skipped by the scanner on this constituent because fast truncate is currently running on the file.
footprint_invalid	integer	Number of files skipped by the scanner on this constituent because their space footprints are invalid.
in_snapshot	integer	Number of files skipped by the scanner on this constituent because they are trapped in snapshots.
incompatible	integer	Number of files skipped by the scanner on this constituent because they are incompatible.
metadata	integer	Number of files skipped by the scanner on this constituent because they metadata files.
on_demand_destination	integer	Number of files skipped by the scanner on this constituent because they are on demand destinations.
other	integer	Number of files skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of files skipped by the scanner on this constituent because they are remote caches.

Name	Type	Description
too_large	integer	Number of files skipped by the scanner on this constituent because they are larger than rebalancing.max_file_size.
too_small	integer	Number of files skipped by the scanner on this constituent because they are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of files skipped by the scanner on this constituent because they are fenced for write operations.

scanner

Properties related to determining which files to move and where to move them to.

Name	Type	Description
blocks_scanned	integer	Number of blocks scanned on this constituent.
blocks_skipped	blocks_skipped	Number of blocks skipped by the scanner on this constituent due to various reasons.
files_scanned	integer	Number of files scanned on this constituent.
files_skipped	files_skipped	Number of files skipped by the scanner on this constituent due to various reasons.

engine

Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
movement	movement	Properties on this constituent related to file movement.

Name	Type	Description
scanner	scanner	Properties related to determining which files to move and where to move them to.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

rebalancing

Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.

Name	Type	Description
data_moved	integer	The amount of data that has been moved in or out of a constituent. A positive value represents data moving into the constituent while a negative value is data moving out of the constituent.
engine	engine	Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
imbalance_percent	integer	Represents the percentage the volume is out of balance.
imbalance_size	integer	Represents how much the volume is out of balance, in bytes.
max_constituent_imbalance_percent	integer	Absolute percentage of the constituent that is most out of balance. This value will update every 30 seconds when rebalancing is not active and every 10 seconds when rebalancing is active.
notices	array[error]	Capacity rebalancing notice messages.
runtime	string	Duration the capacity rebalancing operation has been running.
stop_time	string	Time when the capacity rebalancing operation stopped.
target_used	integer	Represents the ideal used size of each constituent. Calculated by dividing the total FlexGroup volume used size by the number of constituents.
used_for_imbalance	integer	Represents the used size of each constituent, as determined by the rebalancing engine. Calculated by subtracting the size used by snapshots, the size of files pending deletion and the size of filesystem metadata from the volume used size.

retention

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.</num></num></num></num></num>

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".</num></num></num></num></num>
compliance_clock_time	string	This is the volume compliance clock time which is used to manage the SnapLock objects in the volume.
expiry_time	string	Expiry time of the volume. For volumes with an infinite, indefinite or unspecified SnapLock expiry time, "9999-12-31T23:59:59" is used to denote the time.
is_audit_log	boolean	Indicates if this volume has been configured as SnapLock audit log volume for the SVM .

Name	Type	Description
litigation_count	integer	Litigation count indicates the number of active legal-holds on the volume.
privileged_delete	string	Specifies the privileged-delete attribute of a SnapLock volume. On a SnapLock Enterprise (SLE) volume, a designated privileged user can selectively delete files irrespective of the retention time of the file. SLE volumes can have privileged delete as disabled, enabled or permanently_disabled and for SnapLock Compliance (SLC) volumes it is always permanently_disabled.
retention	retention	
type	string	The SnapLock type of the volume. compliance ‐ A SnapLock Compliance(SLC) volume provides the highest level of WORM protection and an administrator cannot destroy a SLC volume if it contains unexpired WORM files. enterprise ‐ An administrator can delete a SnapLock Enterprise(SLE) volume. non_snaplock ‐ Indicates the volume is non-snaplock.
unspecified_retention_file_count	integer	Indicates the number of files with an unspecified retention time in the volume.

destinations

Name	Type	Description
is_cloud	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to a cloud destination.

Name	Type	Description
is_ontap	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to an ONTAP destination. • readOnly: 1 • Introduced in: 9.9 • x-nullable: true

snapmirror

Specifies attributes for SnapMirror protection.

Name	Type	Description
destinations	destinations	
is_protected	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.

Name	Type	Description
used	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), in bytes.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.
used_by_snapshots	integer	Size that is logically used across all snapshots in the volume, in bytes.
used_percent	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), as a percentage.

autodelete

Name	Type	Description
enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.

snapshot

Name	Type	Description
autodelete	autodelete	
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume. This field will no longer be supported in a future release. Use autodelete.enabled instead.
reserve_available	integer	Size available for snapshots within the snapshot reserve, in bytes.

Name	Type	Description
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
reserve_size	integer	Size in the volume that has been set aside as a reserve for snapshot usage, in bytes.
space_used_percent	integer	Percentage of snapshot reserve size that has been used.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
auto_adaptive_compression_footprint_data_reduction	integer	Savings achieved due to Auto Adaptive Compression, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
block_storage_inactive_user_data_percent	integer	Percentage of size that is physically used in the performance tier of the volume.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.

Name	Type	Description
capacity_tier_footprint_data_reduction	integer	Savings achieved in the space used by the capacity tier for this volume in the FabricPool aggregate, in bytes.
compaction_footprint_data_reduction	integer	Savings achieved due to Data Compaction, in bytes.
cross_volume_dedupe_metafiles_footprint	integer	Cross volume deduplication metadata footprint, in bytes.
cross_volume_dedupe_metafiles_temporary_footprint	integer	Cross volume temporary deduplication metadata footprint, in bytes.
dedupe_metafiles_footprint	integer	Deduplication metadata footprint, in bytes.
dedupe_metafiles_temporary_footprint	integer	Temporary deduplication metadata footprint, in bytes.
delayed_free_footprint	integer	Delayed free blocks footprint, in bytes.
effective_total_footprint	integer	Volume footprint after efficiency savings, in bytes. effective total footprint represents total footprint after deducting auto adaptive compression and compaction savings. effective-footprint includes aggregate metadata used by volume.
expected_available	integer	Size that should be available for the volume, irrespective of available size in the aggregate, in bytes.
file_operation_metadata	integer	File operation metadata footprint, in bytes.
filesystem_size	integer	Total usable size of the volume, in bytes.

Name	Type	Description
filesystem_size_fixed	boolean	Specifies whether the file system is to remain of the same size when set to true or to grow when set to false. This option is automatically set to true when a volume becomes SnapMirrored.
footprint	integer	Data used for this volume in the aggregate, in bytes.
fractional_reserve	integer	Used to change the amount of space reserved for overwrites of reserved objects in a volume.
full_threshold_percent	integer	Volume full threshold percentage at which EMS warnings can be sent.
is_used_stale	boolean	Specifies if the virtual space used is stale.
large_size_enabled	boolean	Indicates if the support for large FlexVol volumes and large files is enabled on this volume. When configured to true, FlexVol volume size can reach up to 300TB and single file size can reach 128TB.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for the FlexVol volume or for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
nearly_full_threshold_percent	integer	Volume nearly full threshold percentage at which EMS warnings can be sent.

Name	Type	Description
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
overwrite_reserve	integer	Reserved space for overwrites, in bytes.
overwrite_reserve_used	integer	Overwrite logical reserve space used, in bytes.
percent_used	integer	Percentage of the volume size that is used.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
physical_used	integer	Size that is physically used in the volume, in bytes. Physical used is effective total footprint which is equivalent to total footprint after deducting auto adaptive compression and compaction savings. Physical-used also includes aggregate metadata used by volume.
physical_used_percent	integer	Size that is physically used in the volume, as a percentage.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
size_available_for_snapshots	integer	Available space for snapshots from snap-reserve, in bytes.
snapmirror_destination_footprint	integer	SnapMirror destination footprint, in bytes.
snapshot	snapshot	
snapshot_reserve_unusable	integer	Snapshot reserve that is not available for snapshot creation, in bytes.

Name	Type	Description
snapshot_spill	integer	Space used by the snapshot copies beyond the snap-reserve, in bytes.
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
user_data	integer	User data, in bytes.
volume_guarantee_footprint	integer	Space reserved for future writes in the volume, in bytes.

access

Raw count and latency data for access operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

audit

Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

dir

Raw count and latency data for directory-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

file

Raw count and latency data for file-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

other

Raw count and latency data for create operations on objects other than files, directories and symlinks.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

symlink

Raw count and latency data for symlink-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

create

Raw count and latency data for create operations.

getattr

Raw count and latency data for getattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

link

Raw count and latency data for link operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lock

Raw count and latency data for lock operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lookup

Raw count and latency data for lookup operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

open

Raw count and latency data for open operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

read

Raw count and latency data for read operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

readdir

Raw count and latency data for readdir operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

readlink

Raw count and latency data for readlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

rename

Raw count and latency data for rename operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

setattr

Raw count and latency data for setattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

unlink

Raw count and latency data for unlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

watch

Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

write

Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	

Name	Type	Description
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

cifs_ops_raw

Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache_raw

Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
cache_miss_blocks	integer	Blocks retrieved from origin in case of a cache miss. This can be divided by the raw client_requested_blocks and multiplied by 100 to calculate the cache miss percentage.
client_requested_blocks	integer	Total blocks requested by the client.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

nfs_ops_raw

Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
cifs_ops_raw	cifs_ops_raw	Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
cloud	cloud	These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.
flexcache_raw	flexcache_raw	Performance numbers for FlexCache used to measure cache effectiveness.
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
nfs_ops_raw	nfs_ops_raw	Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM containing the volume. Required on POST.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tiering

Name	Type	Description
min_cooling_days	integer	This parameter specifies the minimum number of days that user data blocks of the volume must be cooled before they can be considered cold and tiered out to the cloud tier. Note that this parameter is only used for tiering purposes and does not affect the reporting of inactive data. The value specified should be greater than the frequency with which applications in the volume shift between different sets of data. This parameter cannot be set when volume tiering policy is either "none" or "all". The default value of this parameter depends on the volume's tiering policy. See the tiering policy section of this documentation for corresponding default values. If the tiering policy on the volume gets changed, then this parameter will be reset to the default value corresponding to the new tiering policy.
object_tags	array[string]	This parameter specifies tags of a volume for objects stored on a FabricPool-enabled aggregate. Each tag is a key,value pair and should be in the format "key=value".

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ This policy allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ This policy allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy is 31 days.

Name	Type	Description
supported	boolean	This parameter specifies whether or not FabricPools are selected when provisioning a FlexGroup volume without specifying "aggregates.name" or "aggregates.uuid". Only FabricPool aggregates are used if this parameter is set to true and only non FabricPool aggregates are used if this parameter is set to false. Tiering support for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. Note that in order to tier data, not only does the volume need to support tiering by using FabricPools, the tiering "policy" must not be 'none'. A volume that uses FabricPools but has a tiering "policy" of 'none' supports tiering, but will not tier any data.

volume

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
activity_tracking	activity_tracking	
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.

Name	Type	Description
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
constituents_per_aggregate	integer	Specifies the number of times to iterate over the aggregates listed with the "aggregates.name" or "aggregates.uuid" when creating or expanding a FlexGroup volume. If a volume is being created on a single aggregate, the system creates a flexible volume if the "constituents_per_aggregate" field is not specified, or a FlexGroup volume if it is specified. If a volume is being created on multiple aggregates, the system always creates a FlexGroup volume. If a volume is being created on multiple aggregates and the "constituents_per_aggregate" field is not specified, the default value of the "constituents_per_aggregate" field is 4. The root constituent of a FlexGroup volume is always placed on the first aggregate in the list, unless 'optimize_aggregates' is specified as 'true'. If the "aggregates.name" or "aggregates.uuid" is specified in a PATCH request to expand an existing FlexGroup volume, the default value of the "constituents_per_aggregate" field is 1. The volume expand operation is only supported on FlexGroup volumes.
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.

Name	Type	Description
create_time	string	Creation time of the volume. This field is generated when the volume is created.
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.

Name	Type	Description
language	string	Language encoding setting for volume. If no language is specified, the volume inherits its SVM language encoding setting.
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.

Name	Type	Description
optimize_aggregates	boolean	Specifies whether to create the constituents of the FlexGroup volume on the aggregates specified in the order they are specified, or whether the system should optimize the ordering of the aggregates. If this value is 'true', the system optimizes the ordering of the aggregates specified. If this value is false, the order of the aggregates is unchanged. The default value is 'false'.
qos	qos	QoS information
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>

Name	Type	Description
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.
snapshot_count	integer	Number of snapshots in the volume.
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	

Name	Type	Description
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
svm	svm	SVM containing the volume. Required on POST.
tiering	tiering	
type	string	Type of the volume. rw ‐ read-write volume. dp ‐ data-protection volume. ls ‐ load-sharing <code>dp</code> volume. Valid in GET.

Name	Type	Description
use_mirrored_aggregates	boolean	Specifies whether mirrored aggregates are selected when provisioning a FlexGroup without specifying "aggregates.name" or "aggregates.uuid". Only mirrored aggregates are used if this parameter is set to 'true' and only unmirrored aggregates are used if this parameter is set to 'false'. Aggregate level mirroring for a FlexGroup volume can be changed by moving all of the constituents to the required aggregates. The default value is 'true' for a MetroCluster configuration and is 'false' for a non-MetroCluster configuration.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a volume

DELETE `/storage/volumes/{uuid}`

Introduced In: 9.6

Deletes a volume. If the UUID belongs to a volume, all of its blocks are freed and returned to its containing aggregate. If a volume is online, it is offlined before deletion. If a volume is mounted, unmount the volume by specifying the nas.path as empty before deleting it using the DELETE operation.

Optional parameters:

- `force` - Bypasses the recovery-queue and completely removes the volume from the aggregate making it non-recoverable. By default, this flag is set to "false".

Related ONTAP commands

- `volume delete`
- `volume clone delete`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the volume.
force	boolean	query	False	Set the force flag to "true" to bypass the recovery queue, making the deleted volume non-recoverable. • Introduced in: 9.12 • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
460770	[Job "jobid"] Job failed.
524615	Failed to delete volume because it has one or more clones.
917531	Cannot delete the root volume because the SVM contains other volumes.
918667	Volume "name" in SVM "svm.name" cannot be taken offline because it is configured to hold audit logs.
918693	Volume "name" in SVM "svm.name" cannot be taken offline because it is configured to hold audit logs.
918701	The specified operation on the volume endpoint is not supported on this platform.
13107349	Operation is only supported on flexible volumes and FlexGroup volumes.

Error Code	Description
65537463	Volume encryption keys (VEK) cannot be created or deleted for data Vserver \"{0}\". External key management has been configured for data Vserver \"{0}\" but ONTAP is not able to encrypt or decrypt with the key manager. Resolve the external key manager key issues at the key manager's portal before creating any new encrypted volumes.
65537529	Encrypted volumes cannot be created or deleted for Vserver \"{0}\" as a rekey operation for the vserver is in progress. Try creating the encrypted volume again after some time. If the problem persists, run the rekey operation again after some time.
65537600	Encrypted volumes cannot be created or deleted for Vserver \"{0}\" while the enabled keystore configuration is being switched. If a previous attempt to switch the keystore configuration failed, or was interrupted, the system will continue to prevent encrypted volume creation for Vserver \"{0}\". Use the \"security key-manager keystore enable\" command to re-run and complete the operation.
65539430	Cannot create or delete volumes on Vserver \"{0}\" while the keystore is being initialized. Wait until the keystore is in the active state, and rerun the volume operation.
65539431	Cannot create or delete volumes on Vserver \"{0}\" while the keystore is being disabled.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a volume

GET `/storage/volumes/{uuid}`

Introduced In: 9.6

Retrieves a volume. The GET API can be used to retrieve the quota state for a FlexVol or a FlexGroup volume.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `is_svm_root`
- `analytics.*`
- `anti_ransomware.*`
- `application.*`
- `encryption.*`
- `convert_unicode`
- `clone.parent_snapshot.name`
- `clone.parent_snapshot.uuid`
- `clone.parent_svm.name`
- `clone.parent_svm.uuid`
- `clone.parent_volume.name`
- `clone.parent_volume.uuid`
- `clone.split_complete_percent`
- `clone.split_estimate`
- `clone.split_initiated`
- `efficiency.*`
- `error_state.*`
- `files.*`
- `max_dir_size`
- `nas.export_policy.id`
- `nas.gid`
- `nas.path`
- `nas.security_style`
- `nas.uid`
- `nas.unix_permissions`
- `nas.junction_parent.name`
- `nas.junction_parent.uuid`
- `snaplock.*`

- restore_to.*
- snapshot_policy.uuid
- quota.*
- qos.*
- flexcache_endpoint_type
- space.block_storage_inactive_user_data
- space.capacity_tier_footprint
- space.performance_tier_footprint
- space.local_tier_footprint
- space.footprint
- space.over_provisioned
- space.metadata
- space.total_footprint
- space.dedupe_metafiles_footprint
- space.dedupe_metafiles_temporary_footprint
- space.delayed_free_footprint
- space.file_operation_metadata
- space.snapmirror_destination_footprint
- space.volume_guarantee_footprint
- space.cross_volume_dedupe_metafiles_footprint
- space.cross_volume_dedupe_metafiles_temporary_footprint
- space.auto_adaptive_compression_footprint_data_reduction
- space.capacity_tier_footprint_data_reduction
- space.compaction_footprint_data_reduction
- space.effective_total_footprint
- space.snapshot_reserve_unusable
- space.snapshot_spill
- space.user_data
- space.logical_space.*
- space.snapshot.*
- space.used_by_afs
- space.afs_total
- space.available_percent
- space.full_threshold_percent

- space.nearly_full_threshold_percent
- space.overwrite_reserve
- space.overwrite_reserve_used
- space.size_available_for_snapshots
- space.percent_used
- space.fractional_reserve
- space.block_storage_inactive_user_data_percent
- space.physical_used
- space.physical_used_percent
- space.expected_available
- space.filesystem_size
- space.filesystem_size_fixed
- guarantee.*
- autosize.*
- movement.*
- statistics.*
- asynchronous_directory_delete.*
- rebalancing.*
- metric.*
- cloud_write_enabled

Related ONTAP commands

- volume show
- volume clone show
- volume efficiency show
- volume encryption show
- volume flexcache show
- volume flexgroup show
- volume move show
- volume quota show
- volume show-space
- volume snaplock show
- volume rebalance show
- security anti-ransomware volume show

- `security anti-ransomware volume attack generate-report`
- `security anti-ransomware volume space show`
- `volume file async-delete client show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the volume.
is_constituent	boolean	query	False	When set to false, only FlexVol and FlexGroup volumes are returned. When set to true, only FlexGroup constituent volumes are returned. Default for GET calls is false. • Introduced in: 9.10 • Default value:
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
access_time_enabled	boolean	Indicates whether or not access time updates are enabled on the volume.
activity_tracking	activity_tracking	

Name	Type	Description
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.
create_time	string	Creation time of the volume. This field is generated when the volume is created.
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	

Name	Type	Description
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.
language	string	Language encoding setting for volume. If no language is specified, the volume inherits its SVM language encoding setting.

Name	Type	Description
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
metric	metric	Performance numbers, such as IOPS, latency and throughput.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.
qos	qos	QoS information
queue_for_encryption	boolean	Specifies whether the volume is queued for encryption.
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.
snapshot_count	integer	Number of snapshots in the volume.
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.

Name	Type	Description
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
svm	svm	SVM containing the volume. Required on POST.
tiering	tiering	
type	string	Type of the volume. rw ‐ read-write volume. dp ‐ data-protection volume. ls ‐ load-sharing <code>dp</code> volume. Valid in GET.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "activity_tracking": {
    "state": "string",
    "unsupported_reason": {
      "code": "124518405",
      "message": "Volume activity tracking cannot be enabled on volumes
that contain LUNs."
    }
  },
  "aggregates": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "aggressive_readahead_mode": "string",
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
```

```
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
```

```
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "bytes_used": 15436648448,
    "file_count": 21134,
    "files_scanned": 43002,
    "initialization": {
      "state": "string"
    },
    "report_time": "2024-11-06 13:57:15 -0500",
    "scan_progress": 17,
    "scan_throttle_reason": {
      "arguments": [
        "string"
      ],
      "code": "6739881",
      "message": "The file system analytics scan running on volume
\"fsavol2\" in SVM \"vs2\" has slowed down on node \"my_node\". Reason:
Computing resources are being used by higher priority workloads."
    },
    "state": "string",
    "subdir_count": 35,
    "total_files": 101890,
    "unsupported_reason": {
      "code": "111411207",
      "message": "File system analytics cannot be enabled on volumes
that contain LUNs."
    }
  },
  "anti_ransomware": {
    "attack_detected_by": "string",
    "attack_detection_parameters": {
      "file_create_op_rate_surge_notify_percent": 100
    },
    "attack_probability": "string",
    "attack_reports": [
      {
        "_links": {
          "suspects": {
            "href": "/api/resourcelink"
```

```
          }
        },
        "time": "2021-06-01 11:06:41 -0400"
      }
    ],
    "block_device_detection_start_time": "string",
    "block_device_detection_state": "string",
    "dry_run_start_time": "string",
    "space": {
      "snapshot_count": 0,
      "used": 0,
      "used_by_logs": 0,
      "used_by_snapshots": 0
    },
    "state": "string",
    "surge_usage": {
      "file_create_peak_rate_per_minute": 10,
      "file_delete_peak_rate_per_minute": 50,
      "file_rename_peak_rate_per_minute": 30,
      "high_entropy_data_write_peak_percent": 30,
      "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
      "time": "2021-12-01 12:46:20 -0500"
    },
    "suspect_files": [
      {
        "count": 0,
        "entropy": "string",
        "format": "string"
      }
    ],
    "typical_usage": {
      "file_create_peak_rate_per_minute": 50,
      "file_delete_peak_rate_per_minute": 10,
      "file_rename_peak_rate_per_minute": 5,
      "high_entropy_data_write_peak_percent": 10,
      "high_entropy_data_write_peak_rate_kb_per_minute": 1200
    },
    "workload": {
      "file_extension_types_count": 3,
      "file_extensions_observed": [
        "pdf",
        "jpeg",
        "txt"
      ],
      "historical_statistics": {
        "file_create_peak_rate_per_minute": 50,
```

```
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      },
      "newly_observed_file_extensions": [
        {
          "count": [
            20
          ],
          "name": [
            "lockile"
          ]
        }
      ],
      "surge_statistics": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "time": "2021-12-01 12:46:20 -0500"
      },
      "surge_usage": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "newly_observed_file_extensions": [
          {
            "count": [
              20
            ],
            "name": [
              "lockile"
            ]
          }
        ],
        "time": "2021-12-01 12:46:20 -0500"
      },
      "typical_usage": {
        "file_create_peak_rate_per_minute": 50,
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
```

```
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      }
    }
  },
  "application": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "asynchronous_directory_delete": {
    "trash_bin": "string"
  },
  "autosize": {
    "mode": "string"
  },
  "clone": {
    "inherited_physical_used": 0,
    "inherited_savings": 0,
    "parent_snapshot": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "this_snapshot",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "parent_svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "parent_volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    },
    "split_complete_percent": 0,
    "split_estimate": 0
```

```
  },
  "cloud_retrieval_policy": "string",
  "comment": "string",
  "consistency_group": {
    "name": "consistency_group_1",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "constituents": [
    {
      "aggregates": {
        "name": "string",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      },
      "movement": {
        "cutover_window": 30,
        "destination_aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "percent_complete": 0,
        "state": "replicating",
        "tiering_policy": "string"
      },
      "name": "string",
      "node": {
        "name": "string",
        "uuid": "string"
      },
      "space": {
        "available": 0,
        "block_storage_inactive_user_data": 0,
        "capacity_tier_footprint": 0,
        "footprint": 0,
        "local_tier_footprint": 0,
        "logical_space": {
          "available": 0,
          "used_by_afs": 0
        },
        "max_size": "string",
        "metadata": 0,
        "over_provisioned": 0,
```

```
        "performance_tier_footprint": 0,
        "snapshot": {
          "used": 0
        },
        "total_footprint": 0,
        "total_metadata": 0,
        "total_metadata_footprint": 0,
        "used": 0
      }
    }
  ],
  "create_time": "2018-06-04 15:00:00 -0400",
  "efficiency": {
    "application_io_size": "string",
    "auto_state": "string",
    "compaction": "string",
    "compression": "string",
    "compression_type": "string",
    "cross_volume_dedupe": "string",
    "dedupe": "string",
    "idcs_scanner": {
      "mode": "string",
      "operation_state": "string",
      "status": "string",
      "threshold_inactive_time": "P14D"
    },
    "last_op_begin": "string",
    "last_op_end": "string",
    "last_op_err": "string",
    "last_op_size": 0,
    "last_op_state": "string",
    "op_state": "string",
    "policy": {
      "name": "string"
    },
    "progress": "string",
    "ratio": 0,
    "scanner": {
      "state": "string"
    },
    "schedule": "string",
    "space_savings": {
      "compression": 0,
      "compression_percent": 0,
      "dedupe": 0,
      "dedupe_percent": 0,
```

```
      "dedupe_sharing": 0,
      "total": 0,
      "total_percent": 0
    },
    "state": "string",
    "storage_efficiency_mode": "string",
    "type": "string",
    "volume_path": "string"
  },
  "encryption": {
    "action": "string",
    "key_create_time": "2022-01-01 14:00:00 -0500",
    "key_id": "string",
    "state": "string",
    "status": {
      "code": "string",
      "message": "string"
    },
    "type": "string"
  },
  "files": {
    "inodefile_capacity": 0,
    "used": 0
  },
  "flash_pool": {
    "cache_eligibility": "string",
    "cache_retention_priority": "string",
    "caching_policy": "string"
  },
  "flexcache_endpoint_type": "string",
  "flexgroup": {
    "name": "my_flexgroup",
    "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
  },
  "granular_data_mode": "string",
  "guarantee": {
    "type": "string"
  },
  "language": "string",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cloud": {
```

```
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "duration": "PT15S",
    "flexcache": {
      "bandwidth_savings": 4096,
      "cache_miss_percent": 20,
      "duration": "PT1D",
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "movement": {
    "capacity_tier_optimized": true,
    "cutover_window": 30,
    "destination_aggregate": {
      "_links": {
        "self": {
```

```
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "percent_complete": 0,
    "start_time": "2020-12-07 03:45:12 -0500",
    "state": "replicating",
    "tiering_policy": "string"
  },
  "name": "vol_cs_dept",
  "nas": {
    "export_policy": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 100,
      "name": "default"
    },
    "junction_parent": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "vs1_root",
      "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
    },
    "path": "/user/my_volume",
    "security_style": "string",
    "unix_permissions": 493
  },
  "nodes": [
    {
      "name": "string",
      "uuid": "string"
    }
  ],
  "optimize_aggregates": true,
  "qos": {
    "policy": {
      "_links": {
        "self": {
```

```
          "href": "/api/resourcelink"
        }
      },
      "max_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "min_throughput_iops": 2000,
      "min_throughput_mbps": 500,
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "quota": {
    "state": "string"
  },
  "rebalancing": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "data_moved": 0,
    "engine": {
      "movement": {
        "file_moves_started": 0,
        "last_error": {
          "code": 0,
          "destination": 0,
          "file_id": 0,
```

```
          "time": "2018-06-04 15:00:00 -0400"
        },
        "most_recent_start_time": "2018-06-04 15:00:00 -0400"
      },
      "scanner": {
        "blocks_scanned": 0,
        "blocks_skipped": {
          "efficiency_blocks": 0,
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        },
        "files_scanned": 0,
        "files_skipped": {
          "efficiency_blocks": 0,
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        }
      }
    },
    "imbalance_percent": 0,
    "imbalance_size": 0,
    "max_constituent_imbalance_percent": 0,
    "max_runtime": "string",
    "notices": [
      {
        "arguments": [
```

```
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    ],
    "runtime": "string",
    "start_time": "string",
    "state": "rebalancing",
    "stop_time": "string",
    "target_used": 0,
    "used_for_imbalance": 0
  },
  "scheduled_snapshot_naming_scheme": "string",
  "sizing_method": "string",
  "snaplock": {
    "append_mode_enabled": "",
    "autocommit_period": "P30M",
    "compliance_clock_time": "2018-06-04 15:00:00 -0400",
    "expiry_time": "Wed Sep  5 11:02:42 GMT 2018",
    "is_audit_log": 1,
    "litigation_count": 10,
    "privileged_delete": "enabled",
    "retention": {
      "default": "P30Y",
      "maximum": "P30Y",
      "minimum": "P30Y"
    },
    "type": "enterprise",
    "unspecified_retention_file_count": 10
  },
  "snapshot_count": 0,
  "snapshot_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "space": {
    "auto_adaptive_compression_footprint_data_reduction": 0,
```

```
    "available": 0,
    "block_storage_inactive_user_data": 0,
    "block_storage_inactive_user_data_percent": 0,
    "capacity_tier_footprint": 0,
    "capacity_tier_footprint_data_reduction": 0,
    "compaction_footprint_data_reduction": 0,
    "cross_volume_dedupe_metafiles_footprint": 0,
    "cross_volume_dedupe_metafiles_temporary_footprint": 0,
    "dedupe_metafiles_footprint": 0,
    "dedupe_metafiles_temporary_footprint": 0,
    "delayed_free_footprint": 0,
    "effective_total_footprint": 0,
    "file_operation_metadata": 0,
    "filesystem_size": 0,
    "footprint": 0,
    "local_tier_footprint": 0,
    "logical_space": {
      "available": 0,
      "used": 0,
      "used_by_afs": 0,
      "used_by_snapshots": 0,
      "used_percent": 0
    },
    "max_size": "string",
    "metadata": 0,
    "over_provisioned": 0,
    "overwrite_reserve": 0,
    "overwrite_reserve_used": 0,
    "percent_used": 0,
    "performance_tier_footprint": 0,
    "size_available_for_snapshots": 0,
    "snapmirror_destination_footprint": 0,
    "snapshot": {
      "autodelete": {
        "commitment": "string",
        "defer_delete": "string",
        "delete_order": "string",
        "prefix": "string",
        "trigger": "string"
      },
      "autodelete_trigger": "string",
      "reserve_available": 0,
      "reserve_size": 0,
      "space_used_percent": 0,
      "used": 0
    },
```

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    "snapshot_reserve_unusable": 0,
    "snapshot_spill": 0,
    "total_footprint": 0,
    "total_metadata": 0,
    "total_metadata_footprint": 0,
    "used": 0,
    "user_data": 0,
    "volume_guarantee_footprint": 0
  },
  "state": "string",
  "statistics": {
    "cifs_ops_raw": {
      "access": {
        "count": 1000,
        "total_time": 200
      },
      "audit": {
        "count": 1000,
        "total_time": 200
      },
      "create": {
        "dir": {
          "count": 1000,
          "total_time": 200
        },
        "file": {
          "count": 1000,
          "total_time": 200
        },
        "other": {
          "count": 1000,
          "total_time": 200
        },
        "symlink": {
          "count": 1000,
          "total_time": 200
        }
      },
      "getattr": {
        "count": 1000,
        "total_time": 200
      },
      "link": {
        "count": 1000,
        "total_time": 200
      },
```

```
      "lock": {
        "count": 1000,
        "total_time": 200
      },
      "lookup": {
        "count": 1000,
        "total_time": 200
      },
      "open": {
        "count": 1000,
        "total_time": 200
      },
      "read": {
        "count": 1000,
        "total_time": 200,
        "volume_protocol_latency_histogram_counts": [
          0,
          0,
          0,
          0,
          0,
          15,
          35,
          100,
          200,
          200,
          300,
          500,
          500,
          500,
          1000,
          1000,
          800,
          500,
          500,
          300,
          200,
          50,
          40,
          15,
          0,
          0,
          0,
          0,
          0,
          0,
```

```
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0
        ],
        "volume_protocol_latency_histogram_labels": [
          "<2us",
          "<6us",
          "<10us",
          "<14us",
          "<20us",
          "<40us",
          "<60us",
          "<80us",
          "<100us",
          "<200us",
          "<400us",
          "<600us",
          "<800us",
          "<1ms",
          "<2ms",
          "<4ms",
          "<6ms",
          "<8ms",
          "<10ms",
          "<12ms",
          "<14ms",
          "<16ms",
          "<18ms",
          "<20ms",
          "<40ms",
          "<60ms",
          "<80ms",
          "<100ms",
          "<200ms",
          "<400ms",
          "<600ms",
          "<800ms",
          "<1s",
          "<2s",
```

```
          "<4s",
          "<6s",
          "<8s",
          "<10s",
          "<20s",
          ">20s"
        ],
        "volume_protocol_size_histogram_counts": [
          2400,
          1055,
          1100,
          700,
          500,
          300,
          200,
          100,
          100,
          50,
          50,
          75,
          25,
          0,
          0
        ],
        "volume_protocol_size_histogram_labels": [
          "<    4KB",
          "=    4KB",
          "<    8KB",
          "=    8KB",
          "<   16KB",
          "=   16KB",
          "<   32KB",
          "=   32KB",
          "<   64KB",
          "=   64KB",
          "<  256KB",
          "=  256KB",
          "< 1024KB",
          "= 1024KB",
          "> 1024KB"
        ]
      },
      "readdir": {
        "count": 1000,
        "total_time": 200
      },
```

```
      "readlink": {
        "count": 1000,
        "total_time": 200
      },
      "rename": {
        "count": 1000,
        "total_time": 200
      },
      "setattr": {
        "count": 1000,
        "total_time": 200
      },
      "unlink": {
        "count": 1000,
        "total_time": 200
      },
      "watch": {
        "count": 1000,
        "total_time": 200
      },
      "write": {
        "count": 1000,
        "total_time": 200,
        "volume_protocol_latency_histogram_counts": [
          0,
          0,
          0,
          0,
          0,
          15,
          35,
          100,
          200,
          200,
          300,
          500,
          500,
          500,
          1000,
          1000,
          800,
          500,
          500,
          300,
          200,
          50,
```

```
          40,
          15,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
        ],
        "volume_protocol_latency_histogram_labels": [
          "<2us",
          "<6us",
          "<10us",
          "<14us",
          "<20us",
          "<40us",
          "<60us",
          "<80us",
          "<100us",
          "<200us",
          "<400us",
          "<600us",
          "<800us",
          "<1ms",
          "<2ms",
          "<4ms",
          "<6ms",
          "<8ms",
          "<10ms",
          "<12ms",
          "<14ms",
          "<16ms",
          "<18ms",
          "<20ms",
          "<40ms",
          "<60ms",
```

```
          "<80ms",
          "<100ms",
          "<200ms",
          "<400ms",
          "<600ms",
          "<800ms",
          "<1s",
          "<2s",
          "<4s",
          "<6s",
          "<8s",
          "<10s",
          "<20s",
          ">20s"
        ],
        "volume_protocol_size_histogram_counts": [
          2400,
          1055,
          1100,
          700,
          500,
          300,
          200,
          100,
          100,
          50,
          50,
          75,
          25,
          0,
          0
        ],
        "volume_protocol_size_histogram_labels": [
          "<    4KB",
          "=    4KB",
          "<    8KB",
          "=    8KB",
          "<   16KB",
          "=   16KB",
          "<   32KB",
          "=   32KB",
          "<   64KB",
          "=   64KB",
          "<  256KB",
          "=  256KB",
          "< 1024KB",
```

```
          "= 1024KB",
          "> 1024KB"
        ]
      }
    },
    "cloud": {
      "iops_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "flexcache_raw": {
      "cache_miss_blocks": 10,
      "client_requested_blocks": 500,
      "status": "ok",
      "timestamp": "2017-01-25 06:20:13 -0500"
    },
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "nfs_ops_raw": {
      "access": {
        "count": 1000,
        "total_time": 200
      },
      "audit": {
        "count": 1000,
        "total_time": 200
      },
      "create": {
        "dir": {
```

```
          "count": 1000,
          "total_time": 200
        },
        "file": {
          "count": 1000,
          "total_time": 200
        },
        "other": {
          "count": 1000,
          "total_time": 200
        },
        "symlink": {
          "count": 1000,
          "total_time": 200
        }
      },
      "getattr": {
        "count": 1000,
        "total_time": 200
      },
      "link": {
        "count": 1000,
        "total_time": 200
      },
      "lock": {
        "count": 1000,
        "total_time": 200
      },
      "lookup": {
        "count": 1000,
        "total_time": 200
      },
      "open": {
        "count": 1000,
        "total_time": 200
      },
      "read": {
        "count": 1000,
        "total_time": 200,
        "volume_protocol_latency_histogram_counts": [
          0,
          0,
          0,
          0,
          0,
          15,
```

```
          35,
          100,
          200,
          200,
          300,
          500,
          500,
          500,
          1000,
          1000,
          800,
          500,
          500,
          300,
          200,
          50,
          40,
          15,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0
        ],
        "volume_protocol_latency_histogram_labels": [
          "<2us",
          "<6us",
          "<10us",
          "<14us",
          "<20us",
          "<40us",
          "<60us",
          "<80us",
          "<100us",
          "<200us",
```

```
          "<400us",
          "<600us",
          "<800us",
          "<1ms",
          "<2ms",
          "<4ms",
          "<6ms",
          "<8ms",
          "<10ms",
          "<12ms",
          "<14ms",
          "<16ms",
          "<18ms",
          "<20ms",
          "<40ms",
          "<60ms",
          "<80ms",
          "<100ms",
          "<200ms",
          "<400ms",
          "<600ms",
          "<800ms",
          "<1s",
          "<2s",
          "<4s",
          "<6s",
          "<8s",
          "<10s",
          "<20s",
          ">20s"
        ],
        "volume_protocol_size_histogram_counts": [
          2400,
          1055,
          1100,
          700,
          500,
          300,
          200,
          100,
          100,
          50,
          50,
          75,
          25,
          0,
```

```
          0
        ],
        "volume_protocol_size_histogram_labels": [
          "<    4KB",
          "=    4KB",
          "<    8KB",
          "=    8KB",
          "<   16KB",
          "=   16KB",
          "<   32KB",
          "=   32KB",
          "<   64KB",
          "=   64KB",
          "<  256KB",
          "=  256KB",
          "< 1024KB",
          "= 1024KB",
          "> 1024KB"
        ]
      },
      "readdir": {
        "count": 1000,
        "total_time": 200
      },
      "readlink": {
        "count": 1000,
        "total_time": 200
      },
      "rename": {
        "count": 1000,
        "total_time": 200
      },
      "setattr": {
        "count": 1000,
        "total_time": 200
      },
      "unlink": {
        "count": 1000,
        "total_time": 200
      },
      "watch": {
        "count": 1000,
        "total_time": 200
      },
      "write": {
        "count": 1000,
```

```
        "total_time": 200,
        "volume_protocol_latency_histogram_counts": [
          0,
          0,
          0,
          0,
          0,
          15,
          35,
          100,
          200,
          200,
          300,
          500,
          500,
          500,
          1000,
          1000,
          800,
          500,
          500,
          300,
          200,
          50,
          40,
          15,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0,
          0
        ],
        "volume_protocol_latency_histogram_labels": [
          "<2us",
          "<6us",
```

```
          "<10us",
          "<14us",
          "<20us",
          "<40us",
          "<60us",
          "<80us",
          "<100us",
          "<200us",
          "<400us",
          "<600us",
          "<800us",
          "<1ms",
          "<2ms",
          "<4ms",
          "<6ms",
          "<8ms",
          "<10ms",
          "<12ms",
          "<14ms",
          "<16ms",
          "<18ms",
          "<20ms",
          "<40ms",
          "<60ms",
          "<80ms",
          "<100ms",
          "<200ms",
          "<400ms",
          "<600ms",
          "<800ms",
          "<1s",
          "<2s",
          "<4s",
          "<6s",
          "<8s",
          "<10s",
          "<20s",
          ">20s"
        ],
        "volume_protocol_size_histogram_counts": [
          2400,
          1055,
          1100,
          700,
          500,
          300,
```

```
          200,
          100,
          100,
          50,
          50,
          75,
          25,
          0,
          0
        ],
        "volume_protocol_size_histogram_labels": [
          "<    4KB",
          "=    4KB",
          "<    8KB",
          "=    8KB",
          "<   16KB",
          "=   16KB",
          "<   32KB",
          "=   32KB",
          "<   64KB",
          "=   64KB",
          "<  256KB",
          "=  256KB",
          "< 1024KB",
          "= 1024KB",
          "> 1024KB"
        ]
      }
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "status": [
    "string"
  ],
  "style": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
```

```
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "tiering": {
    "object_tags": [
      "string"
    ],
    "policy": "string",
    "supported": true
  },
  "type": "string",
  "use_mirrored_aggregates": true,
  "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

unsupported_reason

Name	Type	Description
code	string	If volume activity tracking is not supported on the volume, this field provides an appropriate error code.
message	string	If volume activity tracking is not supported on the volume, this field provides an error message detailing why this is the case.

activity_tracking

Name	Type	Description
state	string	Activity tracking state of the volume. If this value is "on", ONTAP collects top metrics information for the volume in real time. There is a slight impact to I/O performance in order to collect this information. If this value is "off", no activity tracking information is collected or available to view. • enum: ["off", "on"] • Introduced in: 9.10 • x-nullable: true

Name	Type	Description
supported	boolean	This field indicates whether or not volume activity tracking is supported on the volume. If volume activity tracking is not supported, the reason why is provided in the "activity_tracking.unsupported_reason" field.
unsupported_reason	unsupported_reason	

aggregates

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_modified_time

File system analytics information, broken down by date of last modification with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

initialization

Name	Type	Description
state	string	State of the analytics file system scan.

scan_throttle_reason

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	string	Warning code indicating why scanner throttling is reported.
message	string	A message that provides details for scan throttling.

unsupported_reason

Name	Type	Description
code	string	If file system analytics is not supported on the volume, this field provides the error code explaining why.

Name	Type	Description
message	string	If file system analytics is not supported on the volume, this field provides the error message explaining why.

analytics

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk.
file_count	integer	Number of descendants.
files_scanned	integer	Number of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
initialization	initialization	
report_time	string	Time of data collection.
scan_progress	integer	Percentage of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
scan_throttle_reason	scan_throttle_reason	

Name	Type	Description
state	string	File system analytics state of the volume. If this value is "on", ONTAP collects extra file system analytics information for all directories on the volume. There will be a slight impact to I/O performance to collect this information. If this value is "off", file system analytics information is not collected and not available to be viewed. If this value is "initializing", that means file system analytics was recently turned on, and the initialization scan to gather information for all existing files and directories is currently running. If this value is "initialization_paused", this means that the initialization scan is currently paused. If this value is 'unknown', this means that there was an internal error when determining the file system analytics state for the volume. • enum: ["unknown", "initializing", "initialization_paused", "off", "on"] • Introduced in: 9.8 • x-nullable: true
subdir_count	integer	Number of sub-directories.
supported	boolean	This field indicates whether or not file system analytics is supported on the volume. If file system analytics is not supported, the reason will be specified in the "analytics.unsupported_reason" field.
total_files	integer	Total number of files in the volume that the file system analytics initialization scan will process. Only returned when the state is `initializing`.
unsupported_reason	unsupported_reason	

anti_ransomware_volume_attack_detection_parameters

Name	Type	Description
based_on_file_create_op_rate	boolean	Specifies whether attack detection is based on the file create operations rate. This parameter is valid only for NAS volumes.
based_on_file_delete_op_rate	boolean	Specifies whether attack detection is based on the file delete operations rate. This parameter is valid only for NAS volumes.
based_on_file_rename_op_rate	boolean	Specifies whether attack detection is based on the file rename operations rate. This parameter is valid only for NAS volumes.
based_on_high_entropy_data_rate	boolean	Specifies whether a high entropy data rate should be considered for attack detection.
based_on_never_seen_before_file_extension	boolean	Specifies whether file extensions never seen before should be considered for attack detection.
block_device_auto_learned_encryption_threshold	integer	Specifies the block device auto learned encryption threshold.
file_create_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file create rate up to which it is considered normal behavior.
file_delete_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file delete rate up to which it is considered normal behavior.
file_rename_op_rate_surge_notify_percent	integer	Specifies the percent of surge in the file rename rate up to which it is considered normal behavior.

Name	Type	Description
high_entropy_data_surge_notify_percent	integer	Specifies the percentage of surge in high entropy data up to which it is considered as normal behavior. For example, if the usual high entropy data rate in the volume is 5% and if this parameter is set to 100%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 10% at any time. Similarly, if this parameter is set to 400%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 25%, and so on.
never_seen_before_file_extension_count_notify_threshold	integer	Specifies the number of files found with a never seen before file extension up to which it is considered normal behavior.
never_seen_before_file_extension_duration_in_hours	integer	Specifies the duration within which the specified number of files found with never seen before file extensions is considered normal behavior.
relaxing_popular_file_extensions	boolean	Specifies whether popular file extensions should be relaxed from being treated as a suspect for the attack. Some popular file extensions are .txt, .pdf, and so on.

_links

Name	Type	Description
suspects	href	

anti_ransomware_attack_report

Name	Type	Description
_links	_links	
time	string	Timestamp at which ransomware attack is observed.

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

space

Name	Type	Description
snapshot_count	integer	Total number of Anti-ransomware backup snapshots.
used	integer	Total space in bytes used by the Anti-ransomware feature.
used_by_logs	integer	Space in bytes used by the Anti-ransomware analytics logs.
used_by_snapshots	integer	Space in bytes used by the Anti-ransomware backup snapshots.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

suspect_files

Name	Type	Description
count	integer	Total number of `suspect_files.format` files observed by the Anti-ransomware analytics engine on the volume.
entropy	string	Indicates the entropy level of this file type.
format	string	File formats observed by the Anti-ransomware analytics engine on the volume.

typical_usage

Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

historical_statistics

Typical usage values of volume workload.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

newly_observed_file_extensions

Name	Type	Description
count	integer	Count of newly observed file extensions.
name	string	Name of the newly observed file extension.

surge_statistics

Usage values of the volume’s workload during surge.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
time	string	Timestamp at which the first surge in the volume's workload is observed.

anti_ransomware_volume_workload

Name	Type	Description
file_extension_types_count	integer	Count of types of file extensions observed in the volume.
file_extensions_observed	array[string]	File extensions observed in the volume.
historical_statistics	historical_statistics	Typical usage values of volume workload.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
surge_statistics	surge_statistics	Usage values of the volume's workload during surge.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

anti_ransomware

Anti-ransomware related information of the volume.

Name	Type	Description
attack_detected_by	string	This field specifies whether the attack was reported by `File Analysis` or `Encrypted data percentage analysis`.
attack_detection_parameters	anti_ransomware_volume_attack_detection_parameters	
attack_probability	string	Probability of a ransomware attack. `none` No suspected ransomware activity. `low` Minimally suspected ransomware activity. `moderate` Moderately suspected ransomware activity. `high` Significantly suspected ransomware activity.
attack_reports	array[anti_ransomware_attack_report]	
block_device_detection_start_time	string	This field specifies the block device evaluation start time.
block_device_detection_state	string	This field specifies the block device attack detection status. `evaluation_period` Attack detection is currently in its evaluation phase. `active_unsuitable_workload` Attack detection is active, but the current workload is not suitable for Anti-ransomware protection. `active_suitable_workload` Attack detection is active, and the current workload is appropriate for Anti-ransomware protection.
dry_run_start_time	string	Time when Anti-ransomware monitoring `state` is set to dry-run value for starting evaluation mode.
event_log	event_log	
space	space	

Name	Type	Description
state	string	Anti-ransomware state. `disabled` Anti-ransomware monitoring is disabled on the volume. This is the default state in a POST operation. `disable_in_progress` Anti-ransomware monitoring is being disabled and a cleanup operation is in effect. Valid in GET operation. `dry_run` Anti-ransomware monitoring is enabled in the evaluation mode. `enabled` Anti-ransomware monitoring is active on the volume. `paused` Anti-ransomware monitoring is paused on the volume. `enable_paused` Anti-ransomware monitoring is paused on the volume from its earlier enabled state. Valid in GET operation. `dry_run_paused` Anti-ransomware monitoring is paused on the volume from its earlier dry_run state. Valid in GET operation. For POST, the valid Anti-ransomware states are only `disabled`, `enabled` and `dry_run`, whereas for PATCH, `paused` is also valid along with the three valid states for POST.
surge_as_normal	boolean	Indicates whether or not to set the surge values as historical values. This field is no longer supported. Use update_baseline_from_surge instead.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
suspect_files	array[suspect_files]	

Name	Type	Description
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.
update_baseline_from_surge	boolean	Sets the observed surge value as the new baseline on a volume.
workload	anti_ransomware_volume_workload	

application

Name	Type	Description
name	string	Name of the application to which the volume belongs. Available only when the volume is part of an application.
uuid	string	UUID of the application to which the volume belongs. Available only when the volume is part of an application.

asynchronous_directory_delete

Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.

Name	Type	Description
enabled	boolean	Specifies whether asynchronous directory delete from the client is enabled on the volume.
trash_bin	string	Name of the trash bin directory. If no "trash_bin" property is specified when enabling, the default trash bin name, "._ontaptrashbin", is used.

autosize

Name	Type	Description
grow_threshold	integer	Used space threshold size, in percentage, for the automatic growth of the volume. When the amount of used space in the volume becomes greater than this threshold, the volume automatically grows unless it has reached the maximum size. The volume grows when 'space.used' is greater than this percent of 'space.size'. The 'grow_threshold' size cannot be less than or equal to the 'shrink_threshold' size..
maximum	integer	Maximum size in bytes up to which a volume grows automatically. This size cannot be less than the current volume size, or less than or equal to the minimum size of volume.
minimum	integer	Minimum size in bytes up to which the volume shrinks automatically. This size cannot be greater than or equal to the maximum size of volume.
mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows when the amount of used space is above the 'grow_threshold' value. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.

Name	Type	Description
shrink_threshold	integer	Used space threshold size, in percentage, for the automatic shrinkage of the volume. When the amount of used space in the volume drops below this threshold, the volume automatically shrinks unless it has reached the minimum size. The volume shrinks when the 'space.used' is less than the 'shrink_threshold' percent of 'space.size'. The 'shrink_threshold' size cannot be greater than or equal to the 'grow_threshold' size.

snapshot_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

parent_volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

clone

Name	Type	Description
has_flexclone	boolean	Specifies whether this volume is a parent of any FlexClone volume.
inherited_physical_used	integer	Inherited physical used from the clone's base snapshot.
inherited_savings	integer	Inherited savings from the clone's base snapshot.
is_flexclone	boolean	Specifies if this volume is a normal FlexVol volume or FlexClone volume. This field needs to be set when creating a FlexClone volume. Valid in POST.
parent_snapshot	snapshot_reference	
parent_svm	parent_svm	SVM, applies only to SVM-scoped objects.
parent_volume	parent_volume	
split_complete_percent	integer	Percentage of FlexClone volume blocks split from its parent volume.
split_estimate	integer	Space required by the containing-aggregate to split the FlexClone volume.

Name	Type	Description
split_initiated	boolean	This field is set when a split is executed on any FlexClone volume, that is when the FlexClone volume is split from its parent FlexVol volume. Setting this field initiates a split of a FlexClone volume from a FlexVol volume. Valid in PATCH.

consistency_group

Consistency group the volume is part of.

Name	Type	Description
name	string	The name of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.
uuid	string	The UUID of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.

aggregates

Name	Type	Description
name	string	Name of the aggregate hosting the FlexGroup volume constituent.
uuid	string	Unique identifier for the aggregate.

destination_aggregate

Aggregate

Name	Type	Description
_links	_links	
name	string	
uuid	string	

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

node

Name	Type	Description
name	string	List of the node names hosting the FlexGroup volume constituent.
uuid	string	List of the node UUIDs hosting the FlexGroup volume constituent.

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.

snapshot

Name	Type	Description
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
footprint	integer	Data used for this volume in the aggregate, in bytes.
large_size_enabled	boolean	Specifies whether the support for large volumes and large files is enabled on the volume.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.

Name	Type	Description
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
snapshot	snapshot	
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
used_percent	integer	The virtual space used (includes volume reserves) before storage efficiency, as a percent.

constituents

Name	Type	Description
aggregates	aggregates	
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.
name	string	FlexGroup volume constituent name.

Name	Type	Description
node	node	
space	space	

idcs_scanner

Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.

Name	Type	Description
enabled	boolean	Specifies the administrative state of the inactive data compression scanner. Disabling inactive data compression is not allowed on Capacity optimized Flash with QAT supported platforms.
inactive_days	integer	Data blocks older than, or equal to, 'inactive_days' are picked up by the inactive data compression scanner. Valid for PATCH only. Only applicable when 'operation_state' set to 'active'.
mode	string	Specifies the mode of inactive data compression scanner. Valid for PATCH and GET.
operation_state	string	Specifies the operational state of the inactive data compression scanner. VALID for PATCH and GET. Valid options for PATCH are "idle" and "active".
status	string	Status of last inactive data compression scan on the volume.
threshold_inactive_time	string	Time interval after which inactive data compression is automatically triggered. The value is in days and is represented in the ISO-8601 format "P<num>D", for example "P3D" represents a duration of 3 days. This field is not supported on QAT supported platforms.</num>

policy

Name	Type	Description
name	string	Specifies the name of the efficiency policy. The "inline-only" and "none" policies are not supported on Capacity optimized Flash with QAT supported platform.

scanner

Name	Type	Description
compression	boolean	Start compression if scanning old data. Valid for PATCH and GET. This option is not supported for FSX/CVO platforms.
dedupe	boolean	Start deduplication if scanning old data. Valid for PATCH and GET.
scan_old_data	boolean	Indicates whether or not to scan old data. Valid for PATCH and GET.
state	string	State of the volume efficiency scanner. Valid for PATCH and GET. Valid options for PATCH are "idle" and "active".

space_savings

Name	Type	Description
compression	integer	Total disk space that is saved by compressing blocks on the referenced file system, in bytes.
compression_percent	integer	Percentage of total disk space that is saved by compressing blocks on the referenced file system.
dedupe	integer	Total disk space that is saved by deduplication and file cloning, in bytes.

Name	Type	Description
dedupe_percent	integer	Percentage of total disk space that is saved by deduplication and file cloning.
dedupe_sharing	integer	Total disk space that is shared due to deduplication and file cloning.
total	integer	Total disk space saved in the volume due to deduplication, compression and file cloning, in bytes.
total_percent	integer	Percentage of total disk space saved in the volume due to deduplication, compression and file cloning.

efficiency

Name	Type	Description
application_io_size	string	Block size to use by compression. 8k and auto are only allowed for POST. Only auto is supported on QAT supported platforms.
auto_state	string	Automatic deduplication schedule volume state. auto ‐ Volumes with auto_state set to auto start post-process deduplication automatically. deprioritized ‐ Volumes with auto_state set to deprioritized do not start post-process deduplication automatically.
compaction	string	The system can be enabled/disabled compaction. inline ‐ Data will be compacted first and written to the volume. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compaction enabled and some are disabled.

Name	Type	Description
compression	string	The system can be enabled/disabled compression. Disabling compression is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be compressed first and written to the volume. background ‐ Data will be written to the volume and compressed later. both ‐ Inline compression compresses the data and write to the volume, background compression compresses only the blocks on which inline compression is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compression enabled and some are disabled. that On volumes with container compression enabled, background compression refers to inactive data compression scan enabled on the volume.
compression_type	string	Compression type to use by compression. Valid for PATCH and GET.

Name	Type	Description
cross_volume_dedupe	string	The system can be enabled/disabled cross volume dedupe. it can be enabled only when dedupe is enabled. Disabling cross volume dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be cross volume deduped first and written to the volume. background ‐ Data will be written to the volume and cross volume deduped later. both ‐ Inline cross volume dedupe dedupes the data and write to the volume, background cross volume dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are cross volume dedupe enabled and some are disabled.
dedupe	string	The system can be enabled/disabled dedupe. Disabling dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be deduped first and written to the volume. background ‐ Data will be written to the volume and deduped later. both ‐ Inline dedupe dedupes the data and write to the volume, background dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are dedupe enabled and some are disabled.
has_savings	boolean	When true, indicates that the volume contains shared(deduplication, file clones) or compressed data.

Name	Type	Description
idcs_scanner	idcs_scanner	Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.
last_op_begin	string	Last sis operation begin timestamp.
last_op_end	string	Last sis operation end timestamp.
last_op_err	string	Last sis operation error text.
last_op_size	integer	Last sis operation size.
last_op_state	string	Last sis operation state.
logging_enabled	boolean	When true, indicates that space savings for any newly-written data are being logged.
op_state	string	Sis status of the volume.
policy	policy	
progress	string	Sis progress of the volume.
ratio	number	Storage efficiency that does not include the savings provided by snapshots.
scanner	scanner	
schedule	string	Schedule associated with volume.
space_savings	space_savings	

Name	Type	Description

state	string	Storage efficiency state of the volume. Currently, this field supports POST/PATCH only for RW (Read-Write) volumes on FSx for ONTAP and Cloud Volumes ONTAP.
		 disabled ‐ All storage efficiency features are disabled.
		 mixed ‐ Read-only field for FlexGroup volumes, storage efficiency is enabled on certain constituents and disabled on others.
		 On FSx for ONTAP and Cloud Volumes ONTAP ‐
		   enabled ‐ All supported storage efficiency features for the volume are enabled.
		   custom ‐ Read-only field currently only supported for the FSx for ONTAP and Cloud Volumes ONTAP, user-defined storage efficiency features are enabled.
		 For other platforms ‐
		   enabled ‐ At least one storage efficiency feature for the volume is enabled.
		• enum: ["disabled", "enabled", "mixed", "custom"]
		• Introduced in: 9.9
		• x-nullable: true

storage_efficiency_mode	string	Storage efficiency mode used by volume. This parameter is supported only on AFF platforms. There is no difference between default and efficient modes on QAT supported platforms and auto adaptive compression is set irrespective of the modes.
type	string	Sis Type of the volume.
volume_path	string	Absolute volume path of the volume.

status

Name	Type	Description
code	string	Encryption progress message code.
message	string	Encryption progress message.

encryption

Name	Type	Description
action	string	This field can be used to pause an ongoing rekey or conversion operation or resume a paused rekey or conversion operation. Valid in PATCH. The following actions are supported for this field: conversion_pause ‐ Pause an encryption conversion operation currently in progress. conversion_resume ‐ Resume a paused encryption conversion operation. rekey_pause ‐ Pause an encryption rekey operation currently in progress. rekey_resume ‐ Resume a paused encryption rekey operation.
enabled	boolean	Creates an encrypted or an unencrypted volume. For POST, when set to 'true', a new key is generated and used to encrypt the given volume. In that case, the underlying SVM must be configured with the key manager. When set to 'false', the volume created will be unencrypted. For PATCH, when set to 'true', it encrypts an unencrypted volume. Specifying the parameter as 'false' in a PATCH operation for an encrypted volume is only supported when moving the volume to another aggregate.
key_create_time	string	Encryption key creation time of the volume.

Name	Type	Description
key_id	string	The key ID used for creating encrypted volume. A new key-id is generated for creating an encrypted volume. This key-id is associated with the generated key.
rekey	boolean	If set to 'true', re-encrypts the volume with a new key. Valid in PATCH.
state	string	Volume encryption state. encrypted ‐ The volume is completely encrypted. encrypting ‐ Encryption operation is in progress. partial ‐ Some constituents are encrypted and some are not. Applicable only for FlexGroup volume. rekeying. Encryption of volume with a new key is in progress. unencrypted ‐ The volume is a plain-text one.
status	status	
type	string	Volume encryption type. none ‐ The volume is a plain-text one. volume ‐ The volume is encrypted with NVE (NetApp Volume Encryption). aggregate ‐ The volume is encrypted with NAE (NetApp Aggregate Encryption).

error_state

Name	Type	Description
has_bad_blocks	boolean	Indicates whether the volume has any corrupt data blocks. If the damaged data block is accessed, an IO error, such as EIO for NFS or STATUS_FILE_CORRUPT for CIFS, is returned.

Name	Type	Description
is_inconsistent	boolean	Indicates whether the file system has any inconsistencies. true ‐ File system is inconsistent. false ‐ File system in not inconsistent.

files

Name	Type	Description
inodefile_capacity	integer	Number of inodes that can currently be stored on the volume for user-visible files. This number dynamically increases as more user-visible files are created.
maximum	integer	The maximum number of files (inodes) for user-visible data allowed on the volume. This value can be increased or decreased. Increasing the maximum number of files does not immediately cause additional disk space to be used to track files. Instead, as more files are created on the volume, the system dynamically increases the number of disk blocks that are used to track files. The space assigned to track files is never freed, and this value cannot be decreased below the current number of files that can be tracked within the assigned space for the volume. Valid in PATCH.
used	integer	Number of files (inodes) used for user-visible data permitted on the volume. This field is valid only when the volume is online.

flash_pool

Name	Type	Description
cache_eligibility	string	If this parameter is specified, the command displays information only about the volume or volumes with the specified Flash Pool caching attributes.
cache_retention_priority	string	If this parameter is specified, the command displays the volumes that match the specified cache retention priority policy. A cache retention priority defines how long the blocks of a volume will be cached in the Flash Pool once they become cold.
caching_policy	string	This optionally specifies the caching policy to apply to the volume. A caching policy defines how the system caches a volume's data in Flash Cache modules. If a caching policy is not assigned to a volume, the system uses the caching policy that is assigned to the containing SVM. If a caching policy is not assigned to the containing SVM, the system uses the default cluster-wide policy.

flexgroup

Name	Type	Description
name	string	Name of the FlexGroup volume that the constituent is part of.
uuid	string	Unique identifier for the FlexGroup volume that the constituent is part of.

guarantee

Name	Type	Description
honored	boolean	Is the space guarantee of this volume honored in the aggregate?

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes

hosted on FabricPools.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache

Performance number for FlexCache used to measure cache effectiveness.

Name	Type	Description
bandwidth_savings	integer	Bandwidth savings denoting the amount of data served locally by the cache, in bytes.
cache_miss_percent	integer	Cache miss percentage.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS, latency and throughput.

Name	Type	Description
_links	_links	
cloud	cloud	Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes hosted on FabricPools.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
flexcache	flexcache	Performance number for FlexCache used to measure cache effectiveness.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
start_time	string	Start time of volume move.

Name	Type	Description
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

export_policy

Export Policy

Name	Type	Description
_links	_links	
id	integer	
name	string	

junction_parent

Name	Type	Description
_links	_links	
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.
uuid	string	Unique identifier for the parent volume.

nas

Name	Type	Description
export_policy	export_policy	Export Policy
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ Unix-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write) and 1 (execute). First digit selects the set user ID(4), set group ID (2) and sticky (1) attributes. The second digit selects permission for the owner of the file; the third selects permissions for other users in the same group; the fourth for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group and other permissions are given (as in 755, representing the second, third and fourth dight), first digit is assumed to be zero.

nodes

Name	Type	Description
name	string	List of the node names hosting the volume.
uuid	string	List of the node UUIDs hosting the volume.

policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
_links	_links	

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

QoS information

Name	Type	Description
policy	policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

quota

Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
enabled	boolean	This option is used to enable or disable the quota for the volume. This option is valid only in PATCH. Quotas are enabled for FlexVol volumes or FlexGroup volumes when the quota state is "on". Quotas are disabled for FlexVol volumes or FlexGroup volumes when the quota state is "off".
state	string	Quota state of the volume

last_error

Error information for the last failed file move on the constituent.

Name	Type	Description
code	integer	Error code of the last file move error on the constituent.

Name	Type	Description
destination	integer	DSID of the destination constituent of the last file move error on the constituent.
file_id	integer	File ID of the last file move error on the constituent.
time	string	Time of the last file move error on the constituent.

movement

Properties on this constituent related to file movement.

Name	Type	Description
file_moves_started	integer	Number of file moves started on this constituent.
last_error	last_error	Error information for the last failed file move on the constituent.
most_recent_start_time	string	Start time of the most recent file move on the constituent.

blocks_skipped

Number of blocks skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of blocks skipped by the scanner on this constituent because fast truncate is currently running on files.

Name	Type	Description
footprint_invalid	integer	Number of blocks skipped by the scanner on this constituent because of files with invalid space footprints.
in_snapshot	integer	Number of blocks skipped by the scanner on this constituent because of files in snapshots.
incompatible	integer	Number of blocks skipped by the scanner on this constituent because of incompatible files.
metadata	integer	Number of blocks skipped by the scanner on this constituent because of metadata files.
on_demand_destination	integer	Number of blocks skipped by the scanner on this constituent because of on demand destination files.
other	integer	Number of blocks skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of blocks skipped by the scanner on this constituent because of remote caches.
too_large	integer	Number of blocks skipped by the scanner on this constituent because of files that are larger than rebalancing.max_file_size.
too_small	integer	Number of blocks skipped by the scanner on this constituent because of files that are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of blocks skipped by the scanner on this constituent because of files fenced for write operations.

files_skipped

Number of files skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of files skipped by the scanner on this constituent because fast truncate is currently running on the file.
footprint_invalid	integer	Number of files skipped by the scanner on this constituent because their space footprints are invalid.
in_snapshot	integer	Number of files skipped by the scanner on this constituent because they are trapped in snapshots.
incompatible	integer	Number of files skipped by the scanner on this constituent because they are incompatible.
metadata	integer	Number of files skipped by the scanner on this constituent because they metadata files.
on_demand_destination	integer	Number of files skipped by the scanner on this constituent because they are on demand destinations.
other	integer	Number of files skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of files skipped by the scanner on this constituent because they are remote caches.

Name	Type	Description
too_large	integer	Number of files skipped by the scanner on this constituent because they are larger than rebalancing.max_file_size.
too_small	integer	Number of files skipped by the scanner on this constituent because they are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of files skipped by the scanner on this constituent because they are fenced for write operations.

scanner

Properties related to determining which files to move and where to move them to.

Name	Type	Description
blocks_scanned	integer	Number of blocks scanned on this constituent.
blocks_skipped	blocks_skipped	Number of blocks skipped by the scanner on this constituent due to various reasons.
files_scanned	integer	Number of files scanned on this constituent.
files_skipped	files_skipped	Number of files skipped by the scanner on this constituent due to various reasons.

engine

Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
movement	movement	Properties on this constituent related to file movement.

Name	Type	Description
scanner	scanner	Properties related to determining which files to move and where to move them to.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

rebalancing

Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.

Name	Type	Description
_links	_links	
data_moved	integer	The amount of data that has been moved in or out of a constituent. A positive value represents data moving into the constituent while a negative value is data moving out of the constituent.
engine	engine	Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
exclude_snapshots	boolean	Specifies whether or not to exclude files that are stuck in snapshots during rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "exclude_snapshots" value. Once the operation is started, any changes to the "exclude_snapshots" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "exclude_snapshots" value.
imbalance_percent	integer	Represents the percentage the volume is out of balance.
imbalance_size	integer	Represents how much the volume is out of balance, in bytes.
max_constituent_imbalance_percent	integer	Absolute percentage of the constituent that is most out of balance. This value will update every 30 seconds when rebalancing is not active and every 10 seconds when rebalancing is active.
max_file_moves	integer	Specifies the maximum number of concurrent file moves in a volume capacity rebalancing operation on a constituent of the FlexGroup volume. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_file_moves" value. Once the operation is started, any changes to the "max_file_moves" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_file_moves" value.

Name	Type	Description
max_runtime	string	This optional field specifies the maximum time a capacity rebalancing operation runs for. Once the maximum runtime has passed, the capacity rebalancing operation stops. If it is not set, the default value is 6 hours. This value cannot be updated while a capacity rebalancing operation is running. The maximum runtime can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P3D" represents a duration of 3 days. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively.</num></num></num></num></num>
max_threshold	integer	Specifies the maximum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is larger than this value, files are moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_threshold" value. Once the operation is started, any changes to the "max_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_threshold" value.

Name	Type	Description
min_file_size	integer	Specifies the minimum file size to consider for a volume capacity rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "min_file_size" value. Once the operation is started, any changes to the "min_file_size" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_file_size" value. The value must be a multiple of 4KB. If it is not set, the default value is 100MB. Setting "min-file-size" to less than the default value leads to more files being moved. Moved files use granular data, which may impact read/write I/O performance.
min_threshold	integer	Specifies the minimum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is smaller than this value, files are not moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it will use the current "min_threshold" value. Once the operation is started, any changes to the "min_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_threshold" value.
notices	array[error]	Capacity rebalancing notice messages.
runtime	string	Duration the capacity rebalancing operation has been running.

Name	Type	Description
start_time	string	Time when the current capacity rebalancing operation started, or when a future scheduled rebalancing operation begins.

Name	Type	Description
state	string	State of the volume capacity rebalancing operation. PATCH the state to "starting" to trigger the capacity rebalance operation, and include start_time to schedule rebalancing. PATCH the state to "stopping" to stop the capacity rebalance operation, or cancel a scheduled rebalancing operation. PATCH without the state with a valid start_time to modify the start_time of an existing scheduled rebalance operation. While a FlexGroup volume is rebalancing, every constituent will have a rebalancing engine that can either be scanning the filesystem for space usage and files to move, actively moving files or temporarily doing neither. If one or more constituents has a state of "rebalancing_source" or "rebalancing_dest", then files are being moved to rebalance the FlexGroup volume. If no files are being moved, more information about what the rebalancing engine is doing for each constituent is available using the "rebalancing.engine" property. The following values apply to FlexGroup volumes. not_running ‐ capacity rebalancing is not running on the volume. starting ‐ used in a PATCH operation to start a capacity rebalancing operation. rebalancing ‐ capacity rebalancing is running on the volume. paused ‐ volume capacity rebalancing is paused on the volume. stopping ‐ used in a PATCH operation to stop a capacity rebalancing operation. unknown ‐ the system was unable to determine the rebalancing state for the volume. The following values apply to

Name	Type	Description
stop_time	string	Time when the capacity rebalancing operation stopped.
target_used	integer	Represents the ideal used size of each constituent. Calculated by dividing the total FlexGroup volume used size by the number of constituents.
used_for_imbalance	integer	Represents the used size of each constituent, as determined by the rebalancing engine. Calculated by subtracting the size used by snapshots, the size of files pending deletion and the size of filesystem metadata from the volume used size.

retention

the system was unable to determine the rebalancing state for the constituent.

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.</num></num></num></num></num>

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".</num></num></num></num></num>
compliance_clock_time	string	This is the volume compliance clock time which is used to manage the SnapLock objects in the volume.
expiry_time	string	Expiry time of the volume. For volumes with an infinite, indefinite or unspecified SnapLock expiry time, "9999-12-31T23:59:59" is used to denote the time.
is_audit_log	boolean	Indicates if this volume has been configured as SnapLock audit log volume for the SVM .

Name	Type	Description
litigation_count	integer	Litigation count indicates the number of active legal-holds on the volume.
privileged_delete	string	Specifies the privileged-delete attribute of a SnapLock volume. On a SnapLock Enterprise (SLE) volume, a designated privileged user can selectively delete files irrespective of the retention time of the file. SLE volumes can have privileged delete as disabled, enabled or permanently_disabled and for SnapLock Compliance (SLC) volumes it is always permanently_disabled.
retention	retention	
type	string	The SnapLock type of the volume. compliance ‐ A SnapLock Compliance(SLC) volume provides the highest level of WORM protection and an administrator cannot destroy a SLC volume if it contains unexpired WORM files. enterprise ‐ An administrator can delete a SnapLock Enterprise(SLE) volume. non_snaplock ‐ Indicates the volume is non-snaplock.
unspecified_retention_file_count	integer	Indicates the number of files with an unspecified retention time in the volume.

destinations

Name	Type	Description
is_cloud	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to a cloud destination.

Name	Type	Description
is_ontap	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to an ONTAP destination. • readOnly: 1 • Introduced in: 9.9 • x-nullable: true

snapmirror

Specifies attributes for SnapMirror protection.

Name	Type	Description
destinations	destinations	
is_protected	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.

Name	Type	Description
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), in bytes.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.
used_by_snapshots	integer	Size that is logically used across all snapshots in the volume, in bytes.
used_percent	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), as a percentage.

autodelete

Name	Type	Description
commitment	string	By default, snapshot autodelete does not delete snapshots locked by Snapmirror, clones of a volume, a LUN, an NVMe namespace, or a file. Deletion of snapshots locked by these applications is specified using this option. The default value is try.
defer_delete	string	Allows the user to inform snapshot autodelete to defer the deletion of a specified snapshot until the end. The default value is user_created.

Name	Type	Description
delete_order	string	Specifies the order in which snapshot autodelete occurs. Ordering is done using the date and time the snapshot is created. The default value is oldest_first.
enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
prefix	string	Specifies the prefix of the snapshot which if matched, is deleted last. Used with autodelete_defer_delete when used with a prefix value.
target_free_space	integer	Snapshots are deleted, one at a time, until the used volume space reaches the value specified. The default is 20% free space or 80% utilized.
trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*.

snapshot

Name	Type	Description
autodelete	autodelete	
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume. This field will no longer be supported in a future release. Use autodelete.enabled instead.

Name	Type	Description
autodelete_trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*. This field will no longer be supported in a future release. Use autodelete.trigger instead.
reserve_available	integer	Size available for snapshots within the snapshot reserve, in bytes.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
reserve_size	integer	Size in the volume that has been set aside as a reserve for snapshot usage, in bytes.
space_used_percent	integer	Percentage of snapshot reserve size that has been used.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
auto_adaptive_compression_footprint_data_reduction	integer	Savings achieved due to Auto Adaptive Compression, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.

Name	Type	Description
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
block_storage_inactive_user_data_percent	integer	Percentage of size that is physically used in the performance tier of the volume.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
capacity_tier_footprint_data_reduction	integer	Savings achieved in the space used by the capacity tier for this volume in the FabricPool aggregate, in bytes.
compaction_footprint_data_reduction	integer	Savings achieved due to Data Compaction, in bytes.
cross_volume_dedupe_metafiles_footprint	integer	Cross volume deduplication metadata footprint, in bytes.
cross_volume_dedupe_metafiles_temporary_footprint	integer	Cross volume temporary deduplication metadata footprint, in bytes.
dedupe_metafiles_footprint	integer	Deduplication metadata footprint, in bytes.
dedupe_metafiles_temporary_footprint	integer	Temporary deduplication metadata footprint, in bytes.
delayed_free_footprint	integer	Delayed free blocks footprint, in bytes.

Name	Type	Description
effective_total_footprint	integer	Volume footprint after efficiency savings, in bytes. effective total footprint represents total footprint after deducting auto adaptive compression and compaction savings. effective-footprint includes aggregate metadata used by volume.
expected_available	integer	Size that should be available for the volume, irrespective of available size in the aggregate, in bytes.
file_operation_metadata	integer	File operation metadata footprint, in bytes.
filesystem_size	integer	Total usable size of the volume, in bytes.
filesystem_size_fixed	boolean	Specifies whether the file system is to remain of the same size when set to true or to grow when set to false. This option is automatically set to true when a volume becomes SnapMirrored.
footprint	integer	Data used for this volume in the aggregate, in bytes.
fractional_reserve	integer	Used to change the amount of space reserved for overwrites of reserved objects in a volume.
full_threshold_percent	integer	Volume full threshold percentage at which EMS warnings can be sent.
is_used_stale	boolean	Specifies if the virtual space used is stale.
large_size_enabled	boolean	Indicates if the support for large FlexVol volumes and large files is enabled on this volume. When configured to true, FlexVol volume size can reach up to 300TB and single file size can reach 128TB.

Name	Type	Description
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for the FlexVol volume or for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
nearly_full_threshold_percent	integer	Volume nearly full threshold percentage at which EMS warnings can be sent.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
overwrite_reserve	integer	Reserved space for overwrites, in bytes.
overwrite_reserve_used	integer	Overwrite logical reserve space used, in bytes.
percent_used	integer	Percentage of the volume size that is used.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
physical_used	integer	Size that is physically used in the volume, in bytes. Physical used is effective total footprint which is equivalent to total footprint after deducting auto adaptive compression and compaction savings. Physical-used also includes aggregate metadata used by volume.
physical_used_percent	integer	Size that is physically used in the volume, as a percentage.

Name	Type	Description
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
size_available_for_snapshots	integer	Available space for snapshots from snap-reserve, in bytes.
snapmirror_destination_footprint	integer	SnapMirror destination footprint, in bytes.
snapshot	snapshot	
snapshot_reserve_unusable	integer	Snapshot reserve that is not available for snapshot creation, in bytes.
snapshot_spill	integer	Space used by the snapshot copies beyond the snap-reserve, in bytes.
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
user_data	integer	User data, in bytes.
volume_guarantee_footprint	integer	Space reserved for future writes in the volume, in bytes.

access

Raw count and latency data for access operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

audit

Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

dir

Raw count and latency data for directory-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

file

Raw count and latency data for file-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

other

Raw count and latency data for create operations on objects other than files, directories and symlinks.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

symlink

Raw count and latency data for symlink-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

create

Raw count and latency data for create operations.

Name	Type	Description
dir	dir	Raw count and latency data for directory-create operations.
file	file	Raw count and latency data for file-create operations.
other	other	Raw count and latency data for create operations on objects other than files, directories and symlinks.
symlink	symlink	Raw count and latency data for symlink-create operations.

getattr

Raw count and latency data for getattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

link

Raw count and latency data for link operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lock

Raw count and latency data for lock operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lookup

Raw count and latency data for lookup operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

open

Raw count and latency data for open operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

read

Raw count and latency data for read operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

readdir

Raw count and latency data for readdir operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

readlink

Raw count and latency data for readlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

rename

Raw count and latency data for rename operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

setattr

Raw count and latency data for setattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

unlink

Raw count and latency data for unlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

watch

Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

write

Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

cifs_ops_raw

Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

Name	Type	Description
access	access	Raw count and latency data for access operations.
audit	audit	Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.
create	create	Raw count and latency data for create operations.
getattr	getattr	Raw count and latency data for getattr operations.
link	link	Raw count and latency data for link operations.
lock	lock	Raw count and latency data for lock operations.
lookup	lookup	Raw count and latency data for lookup operations.
open	open	Raw count and latency data for open operations.
read	read	Raw count and latency data for read operations, including histograms categorizing operations by size and latency.
readdir	readdir	Raw count and latency data for readdir operations.
readlink	readlink	Raw count and latency data for readlink operations.
rename	rename	Raw count and latency data for rename operations.
setattr	setattr	Raw count and latency data for setattr operations.
unlink	unlink	Raw count and latency data for unlink operations.

Name	Type	Description
watch	watch	Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.
write	write	Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache_raw

Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
cache_miss_blocks	integer	Blocks retrieved from origin in case of a cache miss. This can be divided by the raw client_requested_blocks and multiplied by 100 to calculate the cache miss percentage.
client_requested_blocks	integer	Total blocks requested by the client.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

nfs_ops_raw

Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

Name	Type	Description
access	access	Raw count and latency data for access operations.
audit	audit	Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.
create	create	Raw count and latency data for create operations.
getattr	getattr	Raw count and latency data for getattr operations.

Name	Type	Description
link	link	Raw count and latency data for link operations.
lock	lock	Raw count and latency data for lock operations.
lookup	lookup	Raw count and latency data for lookup operations.
open	open	Raw count and latency data for open operations.
read	read	Raw count and latency data for read operations, including histograms categorizing operations by size and latency.
readdir	readdir	Raw count and latency data for readdir operations.
readlink	readlink	Raw count and latency data for readlink operations.
rename	rename	Raw count and latency data for rename operations.
setattr	setattr	Raw count and latency data for setattr operations.
unlink	unlink	Raw count and latency data for unlink operations.
watch	watch	Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.
write	write	Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
cifs_ops_raw	cifs_ops_raw	Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
cloud	cloud	These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.
flexcache_raw	flexcache_raw	Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
nfs_ops_raw	nfs_ops_raw	Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM containing the volume. Required on POST.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tiering

Name	Type	Description
min_cooling_days	integer	This parameter specifies the minimum number of days that user data blocks of the volume must be cooled before they can be considered cold and tiered out to the cloud tier. Note that this parameter is only used for tiering purposes and does not affect the reporting of inactive data. The value specified should be greater than the frequency with which applications in the volume shift between different sets of data. This parameter cannot be set when volume tiering policy is either "none" or "all". The default value of this parameter depends on the volume's tiering policy. See the tiering policy section of this documentation for corresponding default values. If the tiering policy on the volume gets changed, then this parameter will be reset to the default value corresponding to the new tiering policy.
object_tags	array[string]	This parameter specifies tags of a volume for objects stored on a FabricPool-enabled aggregate. Each tag is a key,value pair and should be in the format "key=value".

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ This policy allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ This policy allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy is 31 days.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update volume attributes

PATCH `/storage/volumes/{uuid}`

Introduced In: 9.6

Updates the attributes of a volume. For movement, use the "validate_only" field on the request to validate but not perform the operation. The PATCH API can be used to enable or disable quotas for a FlexVol or a FlexGroup volume. The PATCH API can also be used to start or stop non-disruptive volume capacity rebalancing for FlexGroup volumes in addition to modifying capacity rebalancing properties. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline removes its junction path.

A PATCH request for volume encryption performs conversion/rekey operations asynchronously. You can retrieve the conversion/rekey progress details by calling a GET request on the corresponding volume endpoint.

Optional properties

- `queue_for_encryption` - Queue volumes for encryption when `encryption.enabled=true`. If this option is not provided or is false, conversion of volumes starts immediately. When there are volumes in the queue and less than four encryptions are running, volumes are encrypted in the order in which they are queued.
- <code>encryption.action</code> - You can pause an ongoing rekey/conversion operation or resume a paused rekey/conversion operation using this field. The following actions are supported for this field: ‐ conversion_pause - Pause an encryption conversion operation currently in progress ‐ conversion_resume - Resume a paused encryption conversion operation ‐ rekey_pause - Pause an encryption rekey operation currently in progress ‐ rekey_resume - Resume a paused encryption rekey operation

Related ONTAP commands

- `volume unmount`
- `volume mount`
- `volume online`
- `volume offline`
- `volume modify`
- `volume clone modify`
- `volume efficiency modify`
- `volume quota on`
- `volume quota off`
- `volume snaplock modify`
- `volume encryption conversion start`
- `volume encryption conversion pause`
- `volume encryption conversion resume`
- `volume encryption rekey start`
- `volume encryption rekey pause`

- `volume encryption rekey resume`
- `volume rebalance start`
- `volume rebalance stop`
- `volume rebalance modify`
- `security anti-ransomware volume enable`
- `security anti-ransomware volume disable`
- `security anti-ransomware volume dry-run`
- `security anti-ransomware volume pause`
- `security anti-ransomware volume resume`
- `volume file async-delete client disable`
- `volume file async-delete client enable`
- `volume move`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the volume.
restore_to.snapshot.uuid	string	query	False	UUID of the snapshot to restore volume to the point in time the snapshot was taken.
restore_to.snapshot.name	string	query	False	Name of the snapshot to restore volume to the point in time the snapshot was taken.
restore_to.path	string	query	False	Path to the file which is restored from the snapshot. • Introduced in: 9.10

Name	Type	In	Required	Description
restore_to.restore_path	string	query	False	Specifies the destination location inside the volume where the file is restored. • Introduced in: 9.10
restore_to.start_byte	number	query	False	Starting byte offset of the source file, in multiples of 4096. • Introduced in: 9.10
restore_to.byte_count	number	query	False	Number of bytes to restore from the source file, in multiples of 4096. • Introduced in: 9.10
preserve_lun_ids	boolean	query	False	Specifies whether LUN IDs need to be preserved during a snapshot restore operation. • Introduced in: 9.10 • Default value:

Name	Type	In	Required	Description
nvfail	string	query	False	When this option is "on", the filer performs additional work at boot time if it finds that there has been any potential data loss due to an NVRAM failure. In such situations, it causes the invalidation of all NFS file handles on all volumes affected by the problem so that client-side users are forced to remount the affected file system (and thus not continue to use potentially incorrect data). It is also possible to specify a set of files per volume that are renamed in such cases. The filer sends error messages to the console whenever such problems are found. • Introduced in: 9.10 • enum: ["off", "on"]
snapshot_directory_access_enabled	boolean	query	False	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume. • Introduced in: 9.10 • Default value: 1

Name	Type	In	Required	Description
sizing_method	string	query	False	Represents the method to modify the size of a Flexgroup. The following methods are supported: • use_existing_resources - Increases or decreases the size of the FlexGroup by increasing or decreasing the size of the current FlexGroup resources • add_new_resources - Increases the size of the FlexGroup by adding new resources. This is limited to two new resources per available aggregate. • Default value: 1 • enum: ["use_existing_resources", "add_new_resources"]

Name	Type	In	Required	Description
scheduled_snapshot_naming_scheme	string	query	False	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency> • Introduced in: 9.10 • Default value: 1 • enum: ["create_time", "ordinal"] </scheduled_frequency>
validate_only	boolean	query	False	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation. • Introduced in: 9.13

Name	Type	In	Required	Description
clone.match_parent_storage_tier	boolean	query	False	Specifies whether the FlexClone volume splits the data blocks by matching its parent storage tier. This option is applicable only if the tiering policy and the tiering minimum cooling days of the parent volume and the FlexClone volume are the same. • Introduced in: 9.9

Name	Type	In	Required	Description
aggressive_readahead_mode	string	query	False	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. This feature is only available on FabricPool volumes on FSx for ONTAP and Cloud Volumes ONTAP. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress. • Introduced in: 9.13 • Default value: 1 • enum: ["none", "file_prefetch", "sequential_read", "cross_file_sequential_read"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
access_time_enabled	boolean	Indicates whether or not access time updates are enabled on the volume.
activity_tracking	activity_tracking	

Name	Type	Description
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
constituents_per_aggregate	integer	Specifies the number of times to iterate over the aggregates listed with the "aggregates.name" or "aggregates.uuid" when creating or expanding a FlexGroup volume. If a volume is being created on a single aggregate, the system creates a flexible volume if the "constituents_per_aggregate" field is not specified, or a FlexGroup volume if it is specified. If a volume is being created on multiple aggregates, the system always creates a FlexGroup volume. If a volume is being created on multiple aggregates and the "constituents_per_aggregate" field is not specified, the default value of the "constituents_per_aggregate" field is 4. The root constituent of a FlexGroup volume is always placed on the first aggregate in the list, unless 'optimize_aggregates' is specified as 'true'. If the "aggregates.name" or "aggregates.uuid" is specified in a PATCH request to expand an existing FlexGroup volume, the default value of the "constituents_per_aggregate" field is 1. The volume expand operation is only supported on FlexGroup volumes.
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.
create_time	string	Creation time of the volume. This field is generated when the volume is created.

Name	Type	Description
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.

Name	Type	Description
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.
qos	qos	QoS information
queue_for_encryption	boolean	Specifies whether the volume is queued for encryption.
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.
snapshot_count	integer	Number of snapshots in the volume.
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.

Name	Type	Description
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
tiering	tiering	
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

Example request


```
{
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "activity_tracking": {
    "state": "string",
    "unsupported_reason": {
      "code": "124518405",
      "message": "Volume activity tracking cannot be enabled on volumes
that contain LUNs."
    }
  },
  "aggregates": [
    {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "aggressive_readahead_mode": "string",
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
```

```
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "bytes_used": 15436648448,
```

```
    "file_count": 21134,
    "files_scanned": 43002,
    "initialization": {
      "state": "string"
    },
    "report_time": "2024-11-06 13:57:15 -0500",
    "scan_progress": 17,
    "scan_throttle_reason": {
      "arguments": [
        "string"
      ],
      "code": "6739881",
      "message": "The file system analytics scan running on volume
\"fsavol2\" in SVM \"vs2\" has slowed down on node \"my_node\". Reason:
Computing resources are being used by higher priority workloads."
    },
    "state": "string",
    "subdir_count": 35,
    "total_files": 101890,
    "unsupported_reason": {
      "code": "111411207",
      "message": "File system analytics cannot be enabled on volumes
that contain LUNs."
    }
  },
  "anti_ransomware": {
    "attack_detected_by": "string",
    "attack_detection_parameters": {
      "file_create_op_rate_surge_notify_percent": 100
    },
    "attack_probability": "string",
    "attack_reports": [
      {
        "time": "2021-06-01 11:06:41 -0400"
      }
    ],
    "block_device_detection_start_time": "string",
    "block_device_detection_state": "string",
    "dry_run_start_time": "string",
    "space": {
      "snapshot_count": 0,
      "used": 0,
      "used_by_logs": 0,
      "used_by_snapshots": 0
    },
    "state": "string",
```

```
    "surge_usage": {
      "file_create_peak_rate_per_minute": 10,
      "file_delete_peak_rate_per_minute": 50,
      "file_rename_peak_rate_per_minute": 30,
      "high_entropy_data_write_peak_percent": 30,
      "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
      "time": "2021-12-01 12:46:20 -0500"
    },
    "suspect_files": [
      {
        "count": 0,
        "entropy": "string",
        "format": "string"
      }
    ],
    "typical_usage": {
      "file_create_peak_rate_per_minute": 50,
      "file_delete_peak_rate_per_minute": 10,
      "file_rename_peak_rate_per_minute": 5,
      "high_entropy_data_write_peak_percent": 10,
      "high_entropy_data_write_peak_rate_kb_per_minute": 1200
    },
    "workload": {
      "file_extension_types_count": 3,
      "file_extensions_observed": [
        "pdf",
        "jpeg",
        "txt"
      ],
      "historical_statistics": {
        "file_create_peak_rate_per_minute": 50,
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      },
      "newly_observed_file_extensions": [
        {
          "count": [
            20
          ],
          "name": [
            "lockile"
          ]
        }
      ],
```

```
      "surge_statistics": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "time": "2021-12-01 12:46:20 -0500"
      },
      "surge_usage": {
        "file_create_peak_rate_per_minute": 10,
        "file_delete_peak_rate_per_minute": 50,
        "file_rename_peak_rate_per_minute": 30,
        "high_entropy_data_write_peak_percent": 30,
        "high_entropy_data_write_peak_rate_kb_per_minute": 2500,
        "newly_observed_file_extensions": [
          {
            "count": [
              20
            ],
            "name": [
              "lockile"
            ]
          }
        ],
        "time": "2021-12-01 12:46:20 -0500"
      },
      "typical_usage": {
        "file_create_peak_rate_per_minute": 50,
        "file_delete_peak_rate_per_minute": 10,
        "file_rename_peak_rate_per_minute": 5,
        "high_entropy_data_write_peak_percent": 10,
        "high_entropy_data_write_peak_rate_kb_per_minute": 1200
      }
    }
  },
  "application": {
    "name": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "asynchronous_directory_delete": {
    "trash_bin": "string"
  },
  "autosize": {
    "mode": "string"
  },
  "clone": {
```

```
    "inherited_physical_used": 0,
    "inherited_savings": 0,
    "is_flexclone": true,
    "split_complete_percent": 0,
    "split_estimate": 0
  },
  "cloud_retrieval_policy": "string",
  "comment": "string",
  "consistency_group": {
    "name": "consistency_group_1",
    "uuid": "1cd8a442-86d1-11e0-ae1d-123478563412"
  },
  "constituents": [
    {
      "aggregates": {
        "name": "string",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      },
      "movement": {
        "cutover_window": 30,
        "destination_aggregate": {
          "name": "aggr1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "percent_complete": 0,
        "state": "replicating",
        "tiering_policy": "string"
      },
      "name": "string",
      "node": {
        "name": "string",
        "uuid": "string"
      },
      "space": {
        "available": 0,
        "block_storage_inactive_user_data": 0,
        "capacity_tier_footprint": 0,
        "footprint": 0,
        "local_tier_footprint": 0,
        "logical_space": {
          "available": 0,
          "used_by_afs": 0
        },
        "max_size": "string",
        "metadata": 0,
        "over_provisioned": 0,
```

```
        "performance_tier_footprint": 0,
        "snapshot": {
          "used": 0
        },
        "total_footprint": 0,
        "total_metadata": 0,
        "total_metadata_footprint": 0,
        "used": 0
      }
    }
  ],
  "create_time": "2018-06-04 15:00:00 -0400",
  "efficiency": {
    "application_io_size": "string",
    "auto_state": "string",
    "compaction": "string",
    "compression": "string",
    "compression_type": "string",
    "cross_volume_dedupe": "string",
    "dedupe": "string",
    "idcs_scanner": {
      "mode": "string",
      "operation_state": "string",
      "status": "string",
      "threshold_inactive_time": "P14D"
    },
    "last_op_begin": "string",
    "last_op_end": "string",
    "last_op_err": "string",
    "last_op_size": 0,
    "last_op_state": "string",
    "op_state": "string",
    "policy": {
      "name": "string"
    },
    "progress": "string",
    "ratio": 0,
    "scanner": {
      "state": "string"
    },
    "schedule": "string",
    "space_savings": {
      "compression": 0,
      "compression_percent": 0,
      "dedupe": 0,
      "dedupe_percent": 0,
```

```
      "dedupe_sharing": 0,
      "total": 0,
      "total_percent": 0
    },
    "state": "string",
    "storage_efficiency_mode": "string",
    "type": "string",
    "volume_path": "string"
  },
  "encryption": {
    "action": "string",
    "key_create_time": "2022-01-01 14:00:00 -0500",
    "key_id": "string",
    "state": "string",
    "status": {
      "code": "string",
      "message": "string"
    },
    "type": "string"
  },
  "files": {
    "inodefile_capacity": 0,
    "used": 0
  },
  "flash_pool": {
    "cache_eligibility": "string",
    "cache_retention_priority": "string",
    "caching_policy": "string"
  },
  "flexcache_endpoint_type": "string",
  "flexgroup": {
    "name": "my_flexgroup",
    "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
  },
  "granular_data_mode": "string",
  "guarantee": {
    "type": "string"
  },
  "movement": {
    "capacity_tier_optimized": true,
    "cutover_window": 30,
    "destination_aggregate": {
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "percent_complete": 0,
```

```
    "start_time": "2020-12-07 03:45:12 -0500",
    "state": "replicating",
    "tiering_policy": "string"
  },
  "name": "vol_cs_dept",
  "nas": {
    "export_policy": {
      "id": 100,
      "name": "default"
    },
    "junction_parent": {
      "name": "vs1_root",
      "uuid": "75c9cfb0-3eb4-11eb-9fb4-005056bb088a"
    },
    "path": "/user/my_volume",
    "security_style": "string",
    "unix_permissions": 493
  },
  "nodes": [
    {
      "name": "string",
      "uuid": "string"
    }
  ],
  "optimize_aggregates": true,
  "qos": {
    "policy": {
      "max_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
      ],
      "max_throughput_iops": 10000,
      "max_throughput_mbps": 500,
      "min_throughput": [
        "900KB/s",
        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
```

```
      ],
      "min_throughput_iops": 2000,
      "min_throughput_mbps": 500,
      "name": "performance",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "quota": {
    "state": "string"
  },
  "rebalancing": {
    "data_moved": 0,
    "engine": {
      "movement": {
        "file_moves_started": 0,
        "last_error": {
          "code": 0,
          "destination": 0,
          "file_id": 0,
          "time": "2018-06-04 15:00:00 -0400"
        },
        "most_recent_start_time": "2018-06-04 15:00:00 -0400"
      },
      "scanner": {
        "blocks_scanned": 0,
        "blocks_skipped": {
          "efficiency_blocks": 0,
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        },
        "files_scanned": 0,
        "files_skipped": {
          "efficiency_blocks": 0,
          "efficiency_percent": 0,
          "fast_truncate": 0,
          "footprint_invalid": 0,
```

```
          "in_snapshot": 0,
          "incompatible": 0,
          "metadata": 0,
          "on_demand_destination": 0,
          "other": 0,
          "remote_cache": 0,
          "too_large": 0,
          "too_small": 0,
          "write_fenced": 0
        }
      }
    },
    "imbalance_percent": 0,
    "imbalance_size": 0,
    "max_constituent_imbalance_percent": 0,
    "max_runtime": "string",
    "notices": [
      {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      }
    ],
    "runtime": "string",
    "start_time": "string",
    "state": "rebalancing",
    "stop_time": "string",
    "target_used": 0,
    "used_for_imbalance": 0
  },
  "scheduled_snapshot_naming_scheme": "string",
  "sizing_method": "string",
  "snaplock": {
    "append_mode_enabled": "",
    "autocommit_period": "P30M",
    "compliance_clock_time": "2018-06-04 15:00:00 -0400",
    "expiry_time": "Wed Sep  5 11:02:42 GMT 2018",
    "is_audit_log": 1,
    "litigation_count": 10,
    "privileged_delete": "enabled",
    "retention": {
```

```
      "default": "P30Y",
      "maximum": "P30Y",
      "minimum": "P30Y"
    },
    "unspecified_retention_file_count": 10
  },
  "snapshot_count": 0,
  "snapshot_policy": {
    "name": "default",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "space": {
    "auto_adaptive_compression_footprint_data_reduction": 0,
    "available": 0,
    "block_storage_inactive_user_data": 0,
    "block_storage_inactive_user_data_percent": 0,
    "capacity_tier_footprint": 0,
    "capacity_tier_footprint_data_reduction": 0,
    "compaction_footprint_data_reduction": 0,
    "cross_volume_dedupe_metafiles_footprint": 0,
    "cross_volume_dedupe_metafiles_temporary_footprint": 0,
    "dedupe_metafiles_footprint": 0,
    "dedupe_metafiles_temporary_footprint": 0,
    "delayed_free_footprint": 0,
    "effective_total_footprint": 0,
    "file_operation_metadata": 0,
    "filesystem_size": 0,
    "footprint": 0,
    "local_tier_footprint": 0,
    "logical_space": {
      "available": 0,
      "used": 0,
      "used_by_afs": 0,
      "used_by_snapshots": 0,
      "used_percent": 0
    },
    "max_size": "string",
    "metadata": 0,
    "over_provisioned": 0,
    "overwrite_reserve": 0,
    "overwrite_reserve_used": 0,
    "percent_used": 0,
    "performance_tier_footprint": 0,
    "size_available_for_snapshots": 0,
    "snapmirror_destination_footprint": 0,
    "snapshot": {
```

```
      "autodelete": {
        "commitment": "string",
        "defer_delete": "string",
        "delete_order": "string",
        "prefix": "string",
        "trigger": "string"
      },
      "autodelete_trigger": "string",
      "reserve_available": 0,
      "reserve_size": 0,
      "space_used_percent": 0,
      "used": 0
    },
    "snapshot_reserve_unusable": 0,
    "snapshot_spill": 0,
    "total_footprint": 0,
    "total_metadata": 0,
    "total_metadata_footprint": 0,
    "used": 0,
    "user_data": 0,
    "volume_guarantee_footprint": 0
  },
  "state": "string",
  "status": [
    "string"
  ],
  "style": "string",
  "tiering": {
    "object_tags": [
      "string"
    ],
    "policy": "string",
    "supported": true
  },
  "use_mirrored_aggregates": true,
  "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
}
```


Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262256	Tags cannot be modified for the volume because of the specified reason.
524511	Failed to restore snapshot "restore_to.snapshot.name".
524849	Attribute cannot be modified for the target volume because of the specified reason.
787141	The specified "aggregates.name" and "aggregates.uuid" refer to different aggregates.
787144	The volume is on an aggregate that is not part of a FabricPool.
917505	SVM not found.
917534	The value specified for field "-size" is too small. Update the field "-size" with the minimum size allowed and retry.
917597	Provisioning a volume on a root aggregate is not supported.
917617	Cannot modify snapshot policy on volumes of type DC, DP, LS or TMP.

Error Code	Description
917628	Modification of the specified fields is not allowed for the target volume type.
917829	Volume autosize grow threshold must be larger than autosize shrink threshold.
917831	Volume minimum autosize must be smaller than the maximum autosize.
917888	Invalid character in volume name. It can have '_' and alphanumeric characters.;
918183	The specified tiering policy is not supported for the current system configuration.
918193	Cannot modify tiering min cooling days when vol move is in progress.
918194	Tiering min cooling days not supported for SVMDR.
918195	Tiering min cooling days not supported for non data volumes.
918196	Tiering min cooling days not allowed for the provided tiering policy.
918248	Specifying a value is not valid for initiating volume FlexClone split operation.
918251	Specifying a value is not valid for a snapshot restore operation.
918252	specified "nas.path" is invalid.
918265	Volume is on the same aggregate.
918266	"movement.destination_aggregate" and "movement.state" are mutually exclusive, unless the state is "cutover-wait".
918267	The specified "movement.destination_aggregate" does not exist.
918291	Invalid volume cloud retrieval policy for the provided tiering policy.
918292	cloud retrieval policy not supported for non data volume.
918293	Cannot modify cloud retrieval policy when vol move is in progress.
918334	Cache cloud retrieval policy requires an effective cluster version of 9.14 or later.
918521	The volume maximum autosize must be smaller than or equal to the maximum volume size.
918532	The FlexClone match-parent-storage-tier option requires an effective cluster version of 9.9.1 or later.

Error Code	Description
918533	The FlexClone match-parent-storage-tier option not applicable for FlexClone volumes hosted on non-FabricPool storage.
918534	The tiering policy values are different for the FlexClone volume and its parent volume. The match-parent-storage-tier option cannot be set to true.
918535	The tiering minimum cooling day values are different for the FlexClone volume and its parent volume. The match-parent-storage-tier option cannot be set to true.
918537	Could not get the FlexClone volume tiering policy or its parent volume tiering policy. Wait a minute and try again.
918538	The match-parent-storage-tier option is not supported for clone creation.
918577	Only FlexVol to FlexGroup conversions are currently supported.
918583	Disabling large volume size is not supported because the volume contains files larger than 16TB or the volume size is larger than 100TB.
918599	Cloud write requires an effective cluster version of 9.13.1 or later.
918600	Cloud write is only supported for volumes in a FabricPool on FSx for ONTAP or Cloud Volumes ONTAP.
918601	Only the \"all\" tiering policy is allowed on a volume with cloud write.
918602	Cannot move volume when cloud write is enabled.
918603	Cloud write is only supported on volumes with Read-Write access.
918604	Cloud write is not supported because the volume is the destination or source endpoint of one or more SnapMirror relationships.
918605	Cloud write cannot be enabled on a clone volume.
918606	Cloud write cannot be enabled on a volume containing LUNs.
918607	Cloud write is not supported because this volume belongs to an SVM that is the source of a DR relationship.
918624	Tiering storage class requires an effective cluster version of ONTAP 9.13.1 or later.

Error Code	Description
918625	Tiering storage class is only supported for volumes in a FabricPool on FSx for ONTAP or Cloud Volumes ONTAP for AWS.
918626	Tiering storage class is not supported for volumes in a FlexGroup.
918627	The specified value for "tiering.storage_class" is not supported.
918636	Volume "name" in SVM "svm.name" is part of a Consistency Group. Snapshot locking cannot be enabled on a volume that is part of a Consistency Group.
918639	One or more of the fields "-max-size","-max-autosize","-size" are being set or modified. Set the values so that "-max-size" is always greater than or equal to "-max-autosize" and "-size".
918641	The value passed for "-max-size" is invalid. Valid values for the current platform are specified.
918647	One or more of the fields "-max-autosize","-size" are being set or modified. Set the values so that "-max-autosize" and "-size" are always less than or equal to the specified value.
918650	The asynchronous directory delete trash bin name cannot be specified unless asynchronous directory delete from the client is being enabled.
918652	"error" is an invalid value for field "-state". Valid values are "online", "offline" and "restricted".
918655	Cloud write is not supported on the current configuration.
918658	Volume is on a FabricPool-enabled aggregate. CIFS applications might time out when cloud write is enabled on a volume that is on a FabricPool-enabled aggregate.
918659	Cloud write can only be enabled on FabricPool-enabled aggregates.
918660	Cloud write enabled volumes can only be moved to FabricPool-enabled aggregates. Disable cloud write to move the volume to a non-FabricPool aggregates.
918703	Modification of the specified volume properties are not supported on this platform.
918775	The "constituent_count" parameter must be greater than the current number of constituents in the FlexGroup volume.

Error Code	Description
918776	The "constituent_count" and "size" parameters cannot both be specified.
918777	The "aggregates" parameter cannot contain both storage pods and aggregates.
1638480	Failed to promote snapshot "restore_to.snapshot.name" because one or more newer snapshots are currently used as a reference snapshot for data protection operations.
1638590	Promoting a "-pre-conversion" snapshot is not supported.
2424998	Unable to determine whether MetroCluster is configured.
2621572	Modification of the specified field is not permitted on an SVM that is configured as the destination for identity discard SVM DR.
6488103	Async directory delete from the client is already enabled on volume "name" in SVM "svm.name".
6488104	Async directory delete from the client is already disabled on volume "name" in SVM "svm.name".
6881612	Cannot enable inline deduplication on a non AFF Platform or on non HYA aggregate.
6881640	The "efficiency.state" field is only supported on read-write volumes on FSx for ONTAP and Cloud Volumes ONTAP.
6881651	File compression is not supported on volumes with **max-size › 300TB**. Modify the volume max-size, then retry.
6881659	Changing "storage-efficiency-mode" from "efficient" to "default" is not supported.
6881661	Volume efficiency scanner cannot be started on volume with efficiency policy set as inline-only.
8454210	Failed to complete the operation because a QoS workload could not be created, modified or deleted. Wait a few seconds, and then try the operation again.
9437885	The volume is not online.
9437886	Volume snapshot restore failed because there are newer unexpired locked snapshots in the volume.
13107256	Operation is only supported on FlexGroup volumes.
13107349	Operation is only supported on flexible volumes and FlexGroup volumes.

Error Code	Description
13107371	Operation is only supported on read-write FlexGroup volumes.
13107404	When adding new resources to a FlexGroup by specifying "aggregates.name" or "aggregates.uuid", the FlexGroup cannot be resized using "size". These operations must be done separately.
13107415	Failed to lookup a volume property.
13107431	Failed to lookup an SVM property.
13107433	A snapshot is scheduled to be taken within the volume capacity rebalancing runtime.
13107434	A SnapMirror update is scheduled within the volume capacity rebalancing runtime.
13109187	When adding new resources to a FlexGroup using "sizing_method", "size" must be specified. Neither "aggregates.name" nor "aggregates.uuid" are allowed to be specified, as the aggregates are selected automatically by the system.
13109198	Resizing by adding new resources is only supported for FlexGroups.
13109258	Cannot enable granular data on volume "name" in Vserver "svm.name". This setting can only be enabled on FlexGroups.
13109259	Granular data cannot be disabled on volume "name" in Vserver "svm.name". This property can only be disabled by restoring a snapshot.
13109260	Failed to enable granular data on the volume.
13763477	Cannot modify the SnapLock configuration on volume "name" in SVM "svm.name" because the volume is a part of a consistency group.
65536965	The key manager on data Vserver \"{0}\" is in the blocked state due to key access errors. Possible reasons for a blocked state include the top-level external key protection key is disabled or not found or the current user does not have access to perform the requested action. Fix the issues with the key manager that manages the top-level external key protection key on data Vserver \"{0}\" to bring the key manager to the active state and then try to bring the volume online again.
65539432	Cannot online volume \"{1}\" on Vserver \"{0}\" while the keystore is being initialized. Wait until the keystore is in the active state, and rerun the volume operation.
65539433	Cannot online volume \"{1}\" on Vserver \"{0}\" while the keystore is being disabled.

Error Code	Description
66846758	Modification of the specified fields is not allowed for FlexCache volumes.
66846772	Modification of the specified fields is not allowed for origin of FlexCache volumes.
111411201	File system analytics cannot be enabled on the target volume because of the specified reason.
111411202	File system analytics cannot be disabled on the target volume because of the specified reason.
111411205	File system analytics requires an effective cluster version of 9.8 or later.
111411206	The specified "analytics.state" is invalid.
111411207	File system analytics cannot be enabled on volumes that contain LUNs.
111411207	Volume file system analytics is not supported on volumes that contain LUNs.
111411209	Volume file system analytics is not supported on FlexCache volumes.
111411210	Volume file system analytics is not supported on audit staging volumes.
111411211	Volume file system analytics is not supported on object store server volumes.
111411212	Volume file system analytics is not supported on SnapMirror destination volumes.
111411216	Enabling or disabling volume file system analytics is not supported on individual FlexGroup constituents.
111411217	Volume file system analytics is not supported on SnapLock volumes.
111411230	Volume file system analytics is not supported on volumes that contain NVMe namespaces.
111411241	Volume file system analytics is not supported for All SAN Array clusters.
111411252	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Ensure there is at least "space.available_percent`" available space in the volume, then try the operation again.
111411253	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Ensure there is at least "space.available_percent" available space in all constituents of the FlexGroup, then try the operation again."

Error Code	Description
111411257	Failed to enable file system analytics on volume "name" in SVM "svm.name" because there is insufficient available space. Increase the volume size to "size", then try the operation again."
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
144180203	Volume capacity rebalancing is not supported on FlexCache volumes.
144180204	Volume capacity rebalancing is not supported on object store volumes.
144180207	Volume capacity rebalancing is not supported on inactive MetroCluster configurations.
144182201	Volume capacity rebalancing using non-disruptive file move operations and granular data requires an effective cluster version of 9.11.1 or later.
144182203	The specified value for the "rebalancing.state" parameter is invalid for a PATCH operation. Valid values are "starting" and "stopping".
144182207	Modifying the volume capacity rebalancing configuration is not supported in the same operation that volume capacity rebalancing is being stopped.
144182211	The specified value for "-max-file-moves" is not valid.
144182212	The "-min-file-size" value specified must be larger than 0.
144182213	The "-min-threshold" value specified must be larger than 0.

Error Code	Description
144182214	The "-max-threshold" value specified must be larger than 0.
144182215	The maximum imbalance threshold value must be larger than the minimum imbalance threshold value.
144182216	Volume capacity rebalancing is running on the volume.
144182219	Volume capacity rebalancing for the volume has been started on some constituents.
144182221	The "-max-runtime" value specified must be 30 minutes or longer.
144182223	Volume capacity rebalancing is not running on the volume.
144182225	Internal error in the data component.
144182226	Failed to load the volume capacity rebalancing configuration for the volume.
144182233	The specified rebalancing start time must be set to the current time or a later time.
144182235	The "-min-file-size" value specified must be larger than or equal to 20MB.
196608022	Failed to start rekey on volume "name" in SVM "svm.name" because of the specified reason.
196608023	Failed to pause rekey on volume "name" because of the specified reason.
196608024	Failed to resume rekey on volume "name" because of the specified reason.
196608038	Failed to start conversion on volume "name" in SVM "svm.name" because of the specified reason.
196608039	Failed to pause conversion on volume "name" because of the specified reason.
196608041	Failed to resume conversion on volume "name" because of the specified reason.
196608207	Rekey operation is already in progress on volume "name".
196608208	Encryption conversion operation is already in progress on volume "name".
196608209	Operation is already paused.
203161623	Disabling anti-ransomware for volume "volume_name" in SVM "vserver_name" is in progress. Wait a few minutes, and try the operation again.

Error Code	Description
203161629	Anti-ransomware is not supported on a volume with Snapshot autodelete commitment set to "destroy".

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

unsupported_reason

Name	Type	Description
code	string	If volume activity tracking is not supported on the volume, this field provides an appropriate error code.
message	string	If volume activity tracking is not supported on the volume, this field provides an error message detailing why this is the case.

activity_tracking

Name	Type	Description
state	string	Activity tracking state of the volume. If this value is "on", ONTAP collects top metrics information for the volume in real time. There is a slight impact to I/O performance in order to collect this information. If this value is "off", no activity tracking information is collected or available to view. • enum: ["off", "on"] • Introduced in: 9.10 • x-nullable: true
supported	boolean	This field indicates whether or not volume activity tracking is supported on the volume. If volume activity tracking is not supported, the reason why is provided in the "activity_tracking.unsupported_reason" field.

Name	Type	Description
unsupported_reason	unsupported_reason	

aggregates

Aggregate

Name	Type	Description
name	string	
uuid	string	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_modified_time

File system analytics information, broken down by date of last modification.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

initialization

Name	Type	Description
state	string	State of the analytics file system scan.

scan_throttle_reason

Name	Type	Description
arguments	array[string]	Arguments present in the warning message encountered.
code	string	Warning code indicating why scanner throttling is reported.
message	string	A message that provides details for scan throttling.

unsupported_reason

Name	Type	Description
code	string	If file system analytics is not supported on the volume, this field provides the error code explaining why.

Name	Type	Description
message	string	If file system analytics is not supported on the volume, this field provides the error message explaining why.

analytics

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk.
file_count	integer	Number of descendants.
files_scanned	integer	Number of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
initialization	initialization	
report_time	string	Time of data collection.
scan_progress	integer	Percentage of files in the volume that the file system analytics initialization scan has processed. Only returned when the state is `initializing`.
scan_throttle_reason	scan_throttle_reason	

Name	Type	Description
state	string	File system analytics state of the volume. If this value is "on", ONTAP collects extra file system analytics information for all directories on the volume. There will be a slight impact to I/O performance to collect this information. If this value is "off", file system analytics information is not collected and not available to be viewed. If this value is "initializing", that means file system analytics was recently turned on, and the initialization scan to gather information for all existing files and directories is currently running. If this value is "initialization_paused", this means that the initialization scan is currently paused. If this value is 'unknown', this means that there was an internal error when determining the file system analytics state for the volume. • enum: ["unknown", "initializing", "initialization_paused", "off", "on"] • Introduced in: 9.8 • x-nullable: true
subdir_count	integer	Number of sub-directories.
supported	boolean	This field indicates whether or not file system analytics is supported on the volume. If file system analytics is not supported, the reason will be specified in the "analytics.unsupported_reason" field.
total_files	integer	Total number of files in the volume that the file system analytics initialization scan will process. Only returned when the state is `initializing`.
unsupported_reason	unsupported_reason	

anti_ransomware_volume_attack_detection_parameters

Name	Type	Description
based_on_file_create_op_rate	boolean	Specifies whether attack detection is based on the file create operations rate. This parameter is valid only for NAS volumes.
based_on_file_delete_op_rate	boolean	Specifies whether attack detection is based on the file delete operations rate. This parameter is valid only for NAS volumes.
based_on_file_rename_op_rate	boolean	Specifies whether attack detection is based on the file rename operations rate. This parameter is valid only for NAS volumes.
based_on_high_entropy_data_rate	boolean	Specifies whether a high entropy data rate should be considered for attack detection.
based_on_never_seen_before_file_extension	boolean	Specifies whether file extensions never seen before should be considered for attack detection.
block_device_auto_learned_encryption_threshold	integer	Specifies the block device auto learned encryption threshold.
file_create_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file create rate up to which it is considered normal behavior.
file_delete_op_rate_surge_notify_percent	integer	Specifies the percentage of surge in the file delete rate up to which it is considered normal behavior.
file_rename_op_rate_surge_notify_percent	integer	Specifies the percent of surge in the file rename rate up to which it is considered normal behavior.

Name	Type	Description
high_entropy_data_surge_notify_percent	integer	Specifies the percentage of surge in high entropy data up to which it is considered as normal behavior. For example, if the usual high entropy data rate in the volume is 5% and if this parameter is set to 100%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 10% at any time. Similarly, if this parameter is set to 400%, it will be considered as an unusual surge if the high entropy data rate of the volume exceeds 25%, and so on.
never_seen_before_file_extension_count_notify_threshold	integer	Specifies the number of files found with a never seen before file extension up to which it is considered normal behavior.
never_seen_before_file_extension_duration_in_hours	integer	Specifies the duration within which the specified number of files found with never seen before file extensions is considered normal behavior.
relaxing_popular_file_extensions	boolean	Specifies whether popular file extensions should be relaxed from being treated as a suspect for the attack. Some popular file extensions are .txt, .pdf, and so on.

anti_ransomware_attack_report

Name	Type	Description
_links	_links	
time	string	Timestamp at which ransomware attack is observed.

event_log

Name	Type	Description
is_enabled_on_new_file_extension_seen	boolean	Specifies whether to send an EMS when a new file extension is discovered.
is_enabled_on_snapshot_copy_creation	boolean	Specifies whether to send an EMS when a snapshot is created.

space

Name	Type	Description
snapshot_count	integer	Total number of Anti-ransomware backup snapshots.
used	integer	Total space in bytes used by the Anti-ransomware feature.
used_by_logs	integer	Space in bytes used by the Anti-ransomware analytics logs.
used_by_snapshots	integer	Space in bytes used by the Anti-ransomware backup snapshots.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

suspect_files

Name	Type	Description
count	integer	Total number of `suspect_files.format` files observed by the Anti-ransomware analytics engine on the volume.
entropy	string	Indicates the entropy level of this file type.
format	string	File formats observed by the Anti-ransomware analytics engine on the volume.

typical_usage

Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

historical_statistics

Typical usage values of volume workload.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Typical peak rate of file creates per minute in the workload of the volume.
file_delete_peak_rate_per_minute	integer	Typical peak rate of file deletes per minute in the workload of the volume.
file_rename_peak_rate_per_minute	integer	Typical peak rate of file renames per minute in the workload of the volume.
high_entropy_data_write_peak_percent	integer	Typical peak percentage of high entropy data writes in the volume.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Typical peak high entropy data write rate in the volume, in KBs per minute.

newly_observed_file_extensions

Name	Type	Description
count	integer	Count of newly observed file extensions.
name	string	Name of the newly observed file extension.

surge_statistics

Usage values of the volume’s workload during surge.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
time	string	Timestamp at which the first surge in the volume's workload is observed.

surge_usage

Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.

Name	Type	Description
file_create_peak_rate_per_minute	integer	Peak rate of file creates per minute in the workload of the volume during surge.
file_delete_peak_rate_per_minute	integer	Peak rate of file deletes per minute in the workload of the volume during surge.
file_rename_peak_rate_per_minute	integer	Peak rate of file renames per minute in the workload of the volume during surge.
high_entropy_data_write_peak_percent	integer	Peak percentage of high entropy data writes in the volume during surge.

Name	Type	Description
high_entropy_data_write_peak_rate_kb_per_minute	integer	Peak high entropy data write rate in the volume during surge, in KBs per minute.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
time	string	Timestamp at which the first surge in the volume's workload is observed.

anti_ransomware_volume_workload

Name	Type	Description
file_extension_types_count	integer	Count of types of file extensions observed in the volume.
file_extensions_observed	array[string]	File extensions observed in the volume.
historical_statistics	historical_statistics	Typical usage values of volume workload.
newly_observed_file_extensions	array[newly_observed_file_extensions]	New file extensions observed in the volume during surge.
surge_statistics	surge_statistics	Usage values of the volume's workload during surge.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.

anti_ransomware

Anti-ransomware related information of the volume.

Name	Type	Description
attack_detected_by	string	This field specifies whether the attack was reported by `File Analysis` or `Encrypted data percentage analysis`.
attack_detection_parameters	anti_ransomware_volume_attack_detection_parameters	
attack_probability	string	Probability of a ransomware attack. `none` No suspected ransomware activity. `low` Minimally suspected ransomware activity. `moderate` Moderately suspected ransomware activity. `high` Significantly suspected ransomware activity.
attack_reports	array[anti_ransomware_attack_report]	
block_device_detection_start_time	string	This field specifies the block device evaluation start time.
block_device_detection_state	string	This field specifies the block device attack detection status. `evaluation_period` Attack detection is currently in its evaluation phase. `active_unsuitable_workload` Attack detection is active, but the current workload is not suitable for Anti-ransomware protection. `active_suitable_workload` Attack detection is active, and the current workload is appropriate for Anti-ransomware protection.
dry_run_start_time	string	Time when Anti-ransomware monitoring `state` is set to dry-run value for starting evaluation mode.
event_log	event_log	
space	space	

Name	Type	Description
state	string	Anti-ransomware state. `disabled` Anti-ransomware monitoring is disabled on the volume. This is the default state in a POST operation. `disable_in_progress` Anti-ransomware monitoring is being disabled and a cleanup operation is in effect. Valid in GET operation. `dry_run` Anti-ransomware monitoring is enabled in the evaluation mode. `enabled` Anti-ransomware monitoring is active on the volume. `paused` Anti-ransomware monitoring is paused on the volume. `enable_paused` Anti-ransomware monitoring is paused on the volume from its earlier enabled state. Valid in GET operation. `dry_run_paused` Anti-ransomware monitoring is paused on the volume from its earlier dry_run state. Valid in GET operation. For POST, the valid Anti-ransomware states are only `disabled`, `enabled` and `dry_run`, whereas for PATCH, `paused` is also valid along with the three valid states for POST.
surge_as_normal	boolean	Indicates whether or not to set the surge values as historical values. This field is no longer supported. Use update_baseline_from_surge instead.
surge_usage	surge_usage	Usage values of the volume's workload during surge. This object is no longer supported use surge_statistics instead.
suspect_files	array[suspect_files]	

Name	Type	Description
typical_usage	typical_usage	Typical usage values of volume workload. This object is no longer supported use historical_statistics instead.
update_baseline_from_surge	boolean	Sets the observed surge value as the new baseline on a volume.
workload	anti_ransomware_volume_workload	

application

Name	Type	Description
name	string	Name of the application to which the volume belongs. Available only when the volume is part of an application.
uuid	string	UUID of the application to which the volume belongs. Available only when the volume is part of an application.

asynchronous_directory_delete

Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.

Name	Type	Description
enabled	boolean	Specifies whether asynchronous directory delete from the client is enabled on the volume.
trash_bin	string	Name of the trash bin directory. If no "trash_bin" property is specified when enabling, the default trash bin name, "._ontaptrashbin", is used.

autosize

Name	Type	Description
grow_threshold	integer	Used space threshold size, in percentage, for the automatic growth of the volume. When the amount of used space in the volume becomes greater than this threshold, the volume automatically grows unless it has reached the maximum size. The volume grows when 'space.used' is greater than this percent of 'space.size'. The 'grow_threshold' size cannot be less than or equal to the 'shrink_threshold' size..
maximum	integer	Maximum size in bytes up to which a volume grows automatically. This size cannot be less than the current volume size, or less than or equal to the minimum size of volume.
minimum	integer	Minimum size in bytes up to which the volume shrinks automatically. This size cannot be greater than or equal to the maximum size of volume.
mode	string	Autosize mode for the volume. grow ‐ Volume automatically grows when the amount of used space is above the 'grow_threshold' value. grow_shrink ‐ Volume grows or shrinks in response to the amount of space used. off ‐ Autosizing of the volume is disabled.

Name	Type	Description
shrink_threshold	integer	Used space threshold size, in percentage, for the automatic shrinkage of the volume. When the amount of used space in the volume drops below this threshold, the volume automatically shrinks unless it has reached the minimum size. The volume shrinks when the 'space.used' is less than the 'shrink_threshold' percent of 'space.size'. The 'shrink_threshold' size cannot be greater than or equal to the 'grow_threshold' size.

snapshot_reference

Name	Type	Description
name	string	
uuid	string	

parent_svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

parent_volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

clone

Name	Type	Description
has_flexclone	boolean	Specifies whether this volume is a parent of any FlexClone volume.
inherited_physical_used	integer	Inherited physical used from the clone's base snapshot.
inherited_savings	integer	Inherited savings from the clone's base snapshot.
split_complete_percent	integer	Percentage of FlexClone volume blocks split from its parent volume.
split_estimate	integer	Space required by the containing-aggregate to split the FlexClone volume.
split_initiated	boolean	This field is set when a split is executed on any FlexClone volume, that is when the FlexClone volume is split from its parent FlexVol volume. Setting this field initiates a split of a FlexClone volume from a FlexVol volume. Valid in PATCH.

consistency_group

Consistency group the volume is part of.

Name	Type	Description
name	string	The name of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.
uuid	string	The UUID of the consistency group to which the volume belongs. Available only when the volume is part of a consistency group. If this volume belongs to a child consistency group, then this will be the UUID of the parent consistency group.

aggregates

Name	Type	Description
name	string	Name of the aggregate hosting the FlexGroup volume constituent.
uuid	string	Unique identifier for the aggregate.

destination_aggregate

Aggregate

Name	Type	Description
name	string	
uuid	string	

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

node

Name	Type	Description
name	string	List of the node names hosting the FlexGroup volume constituent.
uuid	string	List of the node UUIDs hosting the FlexGroup volume constituent.

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.

snapshot

Name	Type	Description
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.

Name	Type	Description
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
footprint	integer	Data used for this volume in the aggregate, in bytes.
large_size_enabled	boolean	Specifies whether the support for large volumes and large files is enabled on the volume.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
snapshot	snapshot	

Name	Type	Description
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
used_percent	integer	The virtual space used (includes volume reserves) before storage efficiency, as a percent.

constituents

Name	Type	Description
aggregates	aggregates	
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents is not supported.
name	string	FlexGroup volume constituent name.
node	node	
space	space	

idcs_scanner

Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.

Name	Type	Description
enabled	boolean	Specifies the administrative state of the inactive data compression scanner. Disabling inactive data compression is not allowed on Capacity optimized Flash with QAT supported platforms.
inactive_days	integer	Data blocks older than, or equal to, 'inactive_days' are picked up by the inactive data compression scanner. Valid for PATCH only. Only applicable when 'operation_state' set to 'active'.
mode	string	Specifies the mode of inactive data compression scanner. Valid for PATCH and GET.
operation_state	string	Specifies the operational state of the inactive data compression scanner. VALID for PATCH and GET. Valid options for PATCH are "idle" and "active".
status	string	Status of last inactive data compression scan on the volume.
threshold_inactive_time	string	Time interval after which inactive data compression is automatically triggered. The value is in days and is represented in the ISO-8601 format "P<num>D", for example "P3D" represents a duration of 3 days. This field is not supported on QAT supported platforms.</num>

policy

Name	Type	Description
name	string	Specifies the name of the efficiency policy. The "inline-only" and "none" policies are not supported on Capacity optimized Flash with QAT supported platform.

scanner

Name	Type	Description
compression	boolean	Start compression if scanning old data. Valid for PATCH and GET. This option is not supported for FSX/CVO platforms.
dedupe	boolean	Start deduplication if scanning old data. Valid for PATCH and GET.
scan_old_data	boolean	Indicates whether or not to scan old data. Valid for PATCH and GET.
state	string	State of the volume efficiency scanner. Valid for PATCH and GET. Valid options for PATCH are "idle" and "active".

space_savings

Name	Type	Description
compression	integer	Total disk space that is saved by compressing blocks on the referenced file system, in bytes.
compression_percent	integer	Percentage of total disk space that is saved by compressing blocks on the referenced file system.
dedupe	integer	Total disk space that is saved by deduplication and file cloning, in bytes.
dedupe_percent	integer	Percentage of total disk space that is saved by deduplication and file cloning.
dedupe_sharing	integer	Total disk space that is shared due to deduplication and file cloning.
total	integer	Total disk space saved in the volume due to deduplication, compression and file cloning, in bytes.

Name	Type	Description
total_percent	integer	Percentage of total disk space saved in the volume due to deduplication, compression and file cloning.

efficiency

Name	Type	Description
application_io_size	string	Block size to use by compression. 8k and auto are only allowed for POST. Only auto is supported on QAT supported platforms.
auto_state	string	Automatic deduplication schedule volume state. auto ‐ Volumes with auto_state set to auto start post-process deduplication automatically. deprioritized ‐ Volumes with auto_state set to deprioritized do not start post-process deduplication automatically.
compaction	string	The system can be enabled/disabled compaction. inline ‐ Data will be compacted first and written to the volume. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compaction enabled and some are disabled.

Name	Type	Description
compression	string	The system can be enabled/disabled compression. Disabling compression is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be compressed first and written to the volume. background ‐ Data will be written to the volume and compressed later. both ‐ Inline compression compresses the data and write to the volume, background compression compresses only the blocks on which inline compression is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are compression enabled and some are disabled. that On volumes with container compression enabled, background compression refers to inactive data compression scan enabled on the volume.
compression_type	string	Compression type to use by compression. Valid for PATCH and GET.

Name	Type	Description
cross_volume_dedupe	string	The system can be enabled/disabled cross volume dedupe. it can be enabled only when dedupe is enabled. Disabling cross volume dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be cross volume deduped first and written to the volume. background ‐ Data will be written to the volume and cross volume deduped later. both ‐ Inline cross volume dedupe dedupes the data and write to the volume, background cross volume dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are cross volume dedupe enabled and some are disabled.
dedupe	string	The system can be enabled/disabled dedupe. Disabling dedupe is not allowed on Capacity optimized Flash with QAT supported platforms. inline ‐ Data will be deduped first and written to the volume. background ‐ Data will be written to the volume and deduped later. both ‐ Inline dedupe dedupes the data and write to the volume, background dedupe dedupes only the blocks on which inline dedupe is not run. none ‐ None mixed ‐ Read only field for FlexGroup volumes, where some of the constituent volumes are dedupe enabled and some are disabled.
has_savings	boolean	When true, indicates that the volume contains shared(deduplication, file clones) or compressed data.

Name	Type	Description
idcs_scanner	idcs_scanner	Inactive data compression scan looks and picks up blocks that have not been read for a certain amount of time(threshold_inactive_days). These blocks are then compressed in 32K chunks. All attributes are valid for GET only, except for 'operation_state' which is valid for PATCH and GET, and is used to start/stop the scanner.
last_op_begin	string	Last sis operation begin timestamp.
last_op_end	string	Last sis operation end timestamp.
last_op_err	string	Last sis operation error text.
last_op_size	integer	Last sis operation size.
last_op_state	string	Last sis operation state.
logging_enabled	boolean	When true, indicates that space savings for any newly-written data are being logged.
op_state	string	Sis status of the volume.
policy	policy	
progress	string	Sis progress of the volume.
ratio	number	Storage efficiency that does not include the savings provided by snapshots.
scanner	scanner	
schedule	string	Schedule associated with volume.
space_savings	space_savings	

Name	Type	Description

state	string	Storage efficiency state of the volume. Currently, this field supports POST/PATCH only for RW (Read-Write) volumes on FSx for ONTAP and Cloud Volumes ONTAP.
		 disabled ‐ All storage efficiency features are disabled.
		 mixed ‐ Read-only field for FlexGroup volumes, storage efficiency is enabled on certain constituents and disabled on others.
		 On FSx for ONTAP and Cloud Volumes ONTAP ‐
		   enabled ‐ All supported storage efficiency features for the volume are enabled.
		   custom ‐ Read-only field currently only supported for the FSx for ONTAP and Cloud Volumes ONTAP, user-defined storage efficiency features are enabled.
		 For other platforms ‐
		   enabled ‐ At least one storage efficiency feature for the volume is enabled.
		• enum: ["disabled", "enabled", "mixed", "custom"]
		• Introduced in: 9.9
		• x-nullable: true

storage_efficiency_mode	string	Storage efficiency mode used by volume. This parameter is supported only on AFF platforms. There is no difference between default and efficient modes on QAT supported platforms and auto adaptive compression is set irrespective of the modes.
type	string	Sis Type of the volume.
volume_path	string	Absolute volume path of the volume.

status

Name	Type	Description
code	string	Encryption progress message code.
message	string	Encryption progress message.

encryption

Name	Type	Description
action	string	This field can be used to pause an ongoing rekey or conversion operation or resume a paused rekey or conversion operation. Valid in PATCH. The following actions are supported for this field: conversion_pause ‐ Pause an encryption conversion operation currently in progress. conversion_resume ‐ Resume a paused encryption conversion operation. rekey_pause ‐ Pause an encryption rekey operation currently in progress. rekey_resume ‐ Resume a paused encryption rekey operation.
enabled	boolean	Creates an encrypted or an unencrypted volume. For POST, when set to 'true', a new key is generated and used to encrypt the given volume. In that case, the underlying SVM must be configured with the key manager. When set to 'false', the volume created will be unencrypted. For PATCH, when set to 'true', it encrypts an unencrypted volume. Specifying the parameter as 'false' in a PATCH operation for an encrypted volume is only supported when moving the volume to another aggregate.
key_create_time	string	Encryption key creation time of the volume.

Name	Type	Description
key_id	string	The key ID used for creating encrypted volume. A new key-id is generated for creating an encrypted volume. This key-id is associated with the generated key.
rekey	boolean	If set to 'true', re-encrypts the volume with a new key. Valid in PATCH.
state	string	Volume encryption state. encrypted ‐ The volume is completely encrypted. encrypting ‐ Encryption operation is in progress. partial ‐ Some constituents are encrypted and some are not. Applicable only for FlexGroup volume. rekeying. Encryption of volume with a new key is in progress. unencrypted ‐ The volume is a plain-text one.
status	status	
type	string	Volume encryption type. none ‐ The volume is a plain-text one. volume ‐ The volume is encrypted with NVE (NetApp Volume Encryption). aggregate ‐ The volume is encrypted with NAE (NetApp Aggregate Encryption).

error_state

Name	Type	Description
has_bad_blocks	boolean	Indicates whether the volume has any corrupt data blocks. If the damaged data block is accessed, an IO error, such as EIO for NFS or STATUS_FILE_CORRUPT for CIFS, is returned.

Name	Type	Description
is_inconsistent	boolean	Indicates whether the file system has any inconsistencies. true ‐ File system is inconsistent. false ‐ File system in not inconsistent.

files

Name	Type	Description
inodefile_capacity	integer	Number of inodes that can currently be stored on the volume for user-visible files. This number dynamically increases as more user-visible files are created.
maximum	integer	The maximum number of files (inodes) for user-visible data allowed on the volume. This value can be increased or decreased. Increasing the maximum number of files does not immediately cause additional disk space to be used to track files. Instead, as more files are created on the volume, the system dynamically increases the number of disk blocks that are used to track files. The space assigned to track files is never freed, and this value cannot be decreased below the current number of files that can be tracked within the assigned space for the volume. Valid in PATCH.
used	integer	Number of files (inodes) used for user-visible data permitted on the volume. This field is valid only when the volume is online.

flash_pool

Name	Type	Description
cache_eligibility	string	If this parameter is specified, the command displays information only about the volume or volumes with the specified Flash Pool caching attributes.
cache_retention_priority	string	If this parameter is specified, the command displays the volumes that match the specified cache retention priority policy. A cache retention priority defines how long the blocks of a volume will be cached in the Flash Pool once they become cold.
caching_policy	string	This optionally specifies the caching policy to apply to the volume. A caching policy defines how the system caches a volume's data in Flash Cache modules. If a caching policy is not assigned to a volume, the system uses the caching policy that is assigned to the containing SVM. If a caching policy is not assigned to the containing SVM, the system uses the default cluster-wide policy.

flexgroup

Name	Type	Description
name	string	Name of the FlexGroup volume that the constituent is part of.
uuid	string	Unique identifier for the FlexGroup volume that the constituent is part of.

guarantee

Name	Type	Description
honored	boolean	Is the space guarantee of this volume honored in the aggregate?

Name	Type	Description
type	string	The type of space guarantee of this volume in the aggregate.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes

hosted on FabricPools.

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache

Performance number for FlexCache used to measure cache effectiveness.

Name	Type	Description
bandwidth_savings	integer	Bandwidth savings denoting the amount of data served locally by the cache, in bytes.
cache_miss_percent	integer	Cache miss percentage.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

Performance numbers, such as IOPS, latency and throughput.

Name	Type	Description
cloud	cloud	Performance numbers (IOPS and latency) for cloud store. These numbers are relevant only for volumes hosted on FabricPools.
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
flexcache	flexcache	Performance number for FlexCache used to measure cache effectiveness.
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

movement

Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.

Name	Type	Description
cutover_window	integer	Time window in seconds for cutover. The allowed range is between 30 to 300 seconds.
destination_aggregate	destination_aggregate	Aggregate
percent_complete	integer	Completion percentage
start_time	string	Start time of volume move.

Name	Type	Description
state	string	State of volume move operation. PATCH the state to "aborted" to abort the move operation. PATCH the state to "cutover" to trigger cutover. PATCH the state to "paused" to pause the volume move operation in progress. PATCH the state to "replicating" to resume the paused volume move operation. PATCH the state to "cutover_wait" to go into cutover manually. When volume move operation is waiting to go into "cutover" state, this is indicated by the "cutover_pending" state. A change of state is only supported if volume movement is in progress.
tiering_policy	string	Tiering policy for FabricPool

export_policy

Export Policy

Name	Type	Description
id	integer	
name	string	

junction_parent

Name	Type	Description
name	string	The name of the parent volume that contains the junction inode of this volume. The junction parent volume must belong to the same SVM that owns this volume.
uuid	string	Unique identifier for the parent volume.

nas

Name	Type	Description
export_policy	export_policy	Export Policy
gid	integer	The UNIX group ID of the volume. Valid in POST or PATCH.
junction_parent	junction_parent	
path	string	The fully-qualified path in the owning SVM's namespace at which the volume is mounted. The path is case insensitive and must be unique within a SVM's namespace. Path must begin with '/' and must not end with '/'. Only one volume can be mounted at any given junction path. An empty path in POST creates an unmounted volume. An empty path in PATCH deactivates and unmounts the volume. Taking a volume offline or restricted state removes its junction path. This attribute is reported in GET only when the volume is mounted.
security_style	string	Security style associated with the volume. Valid in POST or PATCH. mixed ‐ Mixed-style security ntfs ‐ NTFS/WIndows-style security unified ‐ Unified-style security, unified UNIX, NFS and CIFS permissions unix ‐ Unix-style security.
uid	integer	The UNIX user ID of the volume. Valid in POST or PATCH.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write) and 1 (execute). First digit selects the set user ID(4), set group ID (2) and sticky (1) attributes. The second digit selects permission for the owner of the file; the third selects permissions for other users in the same group; the fourth for other users not in the group. Valid in POST or PATCH. For security style "mixed" or "unix", the default setting is 0755 in octal (493 in decimal) and for security style "ntfs", the default setting is 0000. In cases where only owner, group and other permissions are given (as in 755, representing the second, third and fourth dight), first digit is assumed to be zero.

nodes

Name	Type	Description
name	string	List of the node names hosting the volume.
uuid	string	List of the node UUIDs hosting the volume.

policy

When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

Name	Type	Description
max_throughput	string	Specifies the maximum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either max_throughput_mbps or max_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.
max_throughput_iops	integer	Specifies the maximum throughput in IOPS, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
max_throughput_mbps	integer	Specifies the maximum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when max_throughput is set during POST or PATCH.
min_throughput	string	Specifies the minimum throughput in Kilobytes per sec, Megabytes per sec or Gigabytes per sec along with or without IOPS. 0 means none.Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when either min_throughput_mbps or min_throughput_iops are set during POST or PATCH. During GET, the returned value is rounded to the largest unit with a value greater than 1.

Name	Type	Description
min_throughput_iops	integer	Specifies the minimum throughput in IOPS, 0 means none. Setting "min_throughput" is supported on AFF platforms only, unless FabricPool tiering policies are set. This is mutually exclusive with name and UUID during POST and PATCH. This cannot be set when min_throughput is set during POST or PATCH.
min_throughput_mbps	integer	Specifies the minimum throughput in Megabytes per sec, 0 means none. This is mutually exclusive with name and UUID during POST and PATCH.This cannot be set when min_throughput is set during POST or PATCH.
name	string	The QoS policy group name. This is mutually exclusive with UUID and other QoS attributes during POST and PATCH.
uuid	string	The QoS policy group UUID. This is mutually exclusive with name and other QoS attributes during POST and PATCH.

qos

QoS information

Name	Type	Description
policy	policy	When "min_throughput_iops", "min_throughput_mbps", "min_throughput", "max_throughput_iops", "max_throughput_mbps" or "max_throughput" attributes are specified, the storage object is assigned to an auto-generated QoS policy group. If the attributes are later modified, the auto-generated QoS policy-group attributes are modified. Attributes can be removed by specifying "0" and policy group by specifying "none". Upon deletion of the storage object or if the attributes are removed, then the QoS policy-group is also removed.

quota

Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
enabled	boolean	This option is used to enable or disable the quota for the volume. This option is valid only in PATCH. Quotas are enabled for FlexVol volumes or FlexGroup volumes when the quota state is "on". Quotas are disabled for FlexVol volumes or FlexGroup volumes when the quota state is "off".
state	string	Quota state of the volume

last_error

Error information for the last failed file move on the constituent.

Name	Type	Description
code	integer	Error code of the last file move error on the constituent.

Name	Type	Description
destination	integer	DSID of the destination constituent of the last file move error on the constituent.
file_id	integer	File ID of the last file move error on the constituent.
time	string	Time of the last file move error on the constituent.

movement

Properties on this constituent related to file movement.

Name	Type	Description
file_moves_started	integer	Number of file moves started on this constituent.
last_error	last_error	Error information for the last failed file move on the constituent.
most_recent_start_time	string	Start time of the most recent file move on the constituent.

blocks_skipped

Number of blocks skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of blocks skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of blocks skipped by the scanner on this constituent because fast truncate is currently running on files.

Name	Type	Description
footprint_invalid	integer	Number of blocks skipped by the scanner on this constituent because of files with invalid space footprints.
in_snapshot	integer	Number of blocks skipped by the scanner on this constituent because of files in snapshots.
incompatible	integer	Number of blocks skipped by the scanner on this constituent because of incompatible files.
metadata	integer	Number of blocks skipped by the scanner on this constituent because of metadata files.
on_demand_destination	integer	Number of blocks skipped by the scanner on this constituent because of on demand destination files.
other	integer	Number of blocks skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of blocks skipped by the scanner on this constituent because of remote caches.
too_large	integer	Number of blocks skipped by the scanner on this constituent because of files that are larger than rebalancing.max_file_size.
too_small	integer	Number of blocks skipped by the scanner on this constituent because of files that are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of blocks skipped by the scanner on this constituent because of files fenced for write operations.

files_skipped

Number of files skipped by the scanner on this constituent due to various reasons.

Name	Type	Description
efficiency_blocks	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in blocks, would be too high.
efficiency_percent	integer	Number of files skipped by the scanner on this constituent because storage efficiency lost, in percent, would be too high.
fast_truncate	integer	Number of files skipped by the scanner on this constituent because fast truncate is currently running on the file.
footprint_invalid	integer	Number of files skipped by the scanner on this constituent because their space footprints are invalid.
in_snapshot	integer	Number of files skipped by the scanner on this constituent because they are trapped in snapshots.
incompatible	integer	Number of files skipped by the scanner on this constituent because they are incompatible.
metadata	integer	Number of files skipped by the scanner on this constituent because they metadata files.
on_demand_destination	integer	Number of files skipped by the scanner on this constituent because they are on demand destinations.
other	integer	Number of files skipped by the scanner on this constituent for all other reasons.
remote_cache	integer	Number of files skipped by the scanner on this constituent because they are remote caches.

Name	Type	Description
too_large	integer	Number of files skipped by the scanner on this constituent because they are larger than rebalancing.max_file_size.
too_small	integer	Number of files skipped by the scanner on this constituent because they are smaller than rebalancing.min_file_size.
write_fenced	integer	Number of files skipped by the scanner on this constituent because they are fenced for write operations.

scanner

Properties related to determining which files to move and where to move them to.

Name	Type	Description
blocks_scanned	integer	Number of blocks scanned on this constituent.
blocks_skipped	blocks_skipped	Number of blocks skipped by the scanner on this constituent due to various reasons.
files_scanned	integer	Number of files scanned on this constituent.
files_skipped	files_skipped	Number of files skipped by the scanner on this constituent due to various reasons.

engine

Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
movement	movement	Properties on this constituent related to file movement.

Name	Type	Description
scanner	scanner	Properties related to determining which files to move and where to move them to.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

rebalancing

Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.

Name	Type	Description
data_moved	integer	The amount of data that has been moved in or out of a constituent. A positive value represents data moving into the constituent while a negative value is data moving out of the constituent.
engine	engine	Each constituent has one rebalancing engine that co-ordinates scanning constituents for free space and files to move, as well as moving files between constituents. The engine properties must be explicitly requested, are meant for helping diagnose why the volume rebalancer is making decisions.

Name	Type	Description
exclude_snapshots	boolean	Specifies whether or not to exclude files that are stuck in snapshots during rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "exclude_snapshots" value. Once the operation is started, any changes to the "exclude_snapshots" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "exclude_snapshots" value.
imbalance_percent	integer	Represents the percentage the volume is out of balance.
imbalance_size	integer	Represents how much the volume is out of balance, in bytes.
max_constituent_imbalance_percent	integer	Absolute percentage of the constituent that is most out of balance. This value will update every 30 seconds when rebalancing is not active and every 10 seconds when rebalancing is active.
max_file_moves	integer	Specifies the maximum number of concurrent file moves in a volume capacity rebalancing operation on a constituent of the FlexGroup volume. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_file_moves" value. Once the operation is started, any changes to the "max_file_moves" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_file_moves" value.

Name	Type	Description
max_runtime	string	This optional field specifies the maximum time a capacity rebalancing operation runs for. Once the maximum runtime has passed, the capacity rebalancing operation stops. If it is not set, the default value is 6 hours. This value cannot be updated while a capacity rebalancing operation is running. The maximum runtime can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P3D" represents a duration of 3 days. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively.</num></num></num></num></num>
max_threshold	integer	Specifies the maximum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is larger than this value, files are moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "max_threshold" value. Once the operation is started, any changes to the "max_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "max_threshold" value.

Name	Type	Description
min_file_size	integer	Specifies the minimum file size to consider for a volume capacity rebalancing operation. When a new capacity rebalancing operation is started on a FlexGroup volume, it uses the current "min_file_size" value. Once the operation is started, any changes to the "min_file_size" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_file_size" value. The value must be a multiple of 4KB. If it is not set, the default value is 100MB. Setting "min-file-size" to less than the default value leads to more files being moved. Moved files use granular data, which may impact read/write I/O performance.
min_threshold	integer	Specifies the minimum imbalance percentage for FlexGroup volume constituents. When a constituent's imbalance percentage is smaller than this value, files are not moved from the constituent. When a new capacity rebalancing operation is started on a FlexGroup volume, it will use the current "min_threshold" value. Once the operation is started, any changes to the "min_threshold" value do not affect the currently running capacity rebalancing operation. Only future capacity rebalancing operations will use the new "min_threshold" value.
notices	array[error]	Capacity rebalancing notice messages.
runtime	string	Duration the capacity rebalancing operation has been running.

Name	Type	Description
start_time	string	Time when the current capacity rebalancing operation started, or when a future scheduled rebalancing operation begins.

Name	Type	Description
state	string	State of the volume capacity rebalancing operation. PATCH the state to "starting" to trigger the capacity rebalance operation, and include start_time to schedule rebalancing. PATCH the state to "stopping" to stop the capacity rebalance operation, or cancel a scheduled rebalancing operation. PATCH without the state with a valid start_time to modify the start_time of an existing scheduled rebalance operation. While a FlexGroup volume is rebalancing, every constituent will have a rebalancing engine that can either be scanning the filesystem for space usage and files to move, actively moving files or temporarily doing neither. If one or more constituents has a state of "rebalancing_source" or "rebalancing_dest", then files are being moved to rebalance the FlexGroup volume. If no files are being moved, more information about what the rebalancing engine is doing for each constituent is available using the "rebalancing.engine" property. The following values apply to FlexGroup volumes. not_running ‐ capacity rebalancing is not running on the volume. starting ‐ used in a PATCH operation to start a capacity rebalancing operation. rebalancing ‐ capacity rebalancing is running on the volume. paused ‐ volume capacity rebalancing is paused on the volume. stopping ‐ used in a PATCH operation to stop a capacity rebalancing operation. unknown ‐ the system was unable to determine the rebalancing state for the volume. The following values apply to

Name	Type	Description
stop_time	string	Time when the capacity rebalancing operation stopped.
target_used	integer	Represents the ideal used size of each constituent. Calculated by dividing the total FlexGroup volume used size by the number of constituents.
used_for_imbalance	integer	Represents the used size of each constituent, as determined by the rebalancing engine. Calculated by subtracting the size used by snapshots, the size of files pending deletion and the size of filesystem metadata from the volume used size.

retention

the system was unable to determine the rebalancing state for the constituent.

Name	Type	Description
default	string	Specifies the default retention period that is applied to files while committing them to the WORM state without an associated retention period. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period and the string "unspecified" to set an unspecified retention period.</num></num></num></num></num>

Name	Type	Description
maximum	string	Specifies the maximum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

Name	Type	Description
minimum	string	Specifies the minimum allowed retention period for files committed to the WORM state on the volume. The retention value represents a duration and must be specified in the ISO-8601 duration format. The retention period can be in years, months, days, hours, and minutes. A duration specified for years, month,s and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The retention string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the duration field also accepts the string "infinite" to set an infinite retention period.</num></num></num></num></num>

snaplock

Name	Type	Description
append_mode_enabled	boolean	Specifies if the volume append mode is enabled or disabled. When it is enabled, all the files created with write permissions on the volume are, by default, WORM appendable files. The user can append the data to a WORM appendable file but cannot modify the existing contents of the file nor delete the file until it expires.

Name	Type	Description
autocommit_period	string	Specifies the autocommit period for SnapLock volume. All files which are not modified for a period greater than the autocommit period of the volume are committed to the WORM state. The autocommit period value represents a duration and must be specified in the ISO-8601 duration format. The autocommit period can be in years, months, days, hours, and minutes. A period specified for years, months, and days is represented in the ISO-8601 format as "P<num>Y", "P<num>M", "P<num>D" respectively, for example "P10Y" represents a duration of 10 years. A duration in hours and minutes is represented by "PT<num>H" and "PT<num>M" respectively. The period string must contain only a single time element that is, either years, months, days, hours, or minutes. A duration which combines different periods is not supported, for example "P1Y10M" is not supported. Apart from the duration specified in the ISO-8601 format, the autocommit field also accepts the string "none".</num></num></num></num></num>
compliance_clock_time	string	This is the volume compliance clock time which is used to manage the SnapLock objects in the volume.
expiry_time	string	Expiry time of the volume. For volumes with an infinite, indefinite or unspecified SnapLock expiry time, "9999-12-31T23:59:59" is used to denote the time.
is_audit_log	boolean	Indicates if this volume has been configured as SnapLock audit log volume for the SVM .

Name	Type	Description
litigation_count	integer	Litigation count indicates the number of active legal-holds on the volume.
privileged_delete	string	Specifies the privileged-delete attribute of a SnapLock volume. On a SnapLock Enterprise (SLE) volume, a designated privileged user can selectively delete files irrespective of the retention time of the file. SLE volumes can have privileged delete as disabled, enabled or permanently_disabled and for SnapLock Compliance (SLC) volumes it is always permanently_disabled.
retention	retention	
unspecified_retention_file_count	integer	Indicates the number of files with an unspecified retention time in the volume.

destinations

Name	Type	Description
is_cloud	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to a cloud destination.
is_ontap	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data to an ONTAP destination. • readOnly: 1 • Introduced in: 9.9 • x-nullable: true

snapmirror

Specifies attributes for SnapMirror protection.

Name	Type	Description
destinations	destinations	

Name	Type	Description
is_protected	boolean	Specifies whether a volume is a SnapMirror source volume, using SnapMirror to protect its data.

snapshot_policy

This is a reference to the snapshot policy.

Name	Type	Description
name	string	
uuid	string	

logical_space

Name	Type	Description
available	integer	The amount of space available in this volume with storage efficiency space considered used, in bytes.
enforcement	boolean	Specifies whether space accounting for operations on the volume is done along with storage efficiency.
reporting	boolean	Specifies whether space reporting on the volume is done along with storage efficiency.
used	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), in bytes.
used_by_afs	integer	The virtual space used by AFS alone (includes volume reserves) and along with storage efficiency, in bytes.
used_by_snapshots	integer	Size that is logically used across all snapshots in the volume, in bytes.

Name	Type	Description
used_percent	integer	SUM of (physical-used, shared_refs, compression_saved_in_plane0, vbn_zero, future_blk_cnt), as a percentage.

autodelete

Name	Type	Description
commitment	string	By default, snapshot autodelete does not delete snapshots locked by Snapmirror, clones of a volume, a LUN, an NVMe namespace, or a file. Deletion of snapshots locked by these applications is specified using this option. The default value is try.
defer_delete	string	Allows the user to inform snapshot autodelete to defer the deletion of a specified snapshot until the end. The default value is user_created.
delete_order	string	Specifies the order in which snapshot autodelete occurs. Ordering is done using the date and time the snapshot is created. The default value is oldest_first.
enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume.
prefix	string	Specifies the prefix of the snapshot which if matched, is deleted last. Used with autodelete_defer_delete when used with a prefix value.
target_free_space	integer	Snapshots are deleted, one at a time, until the used volume space reaches the value specified. The default is 20% free space or 80% utilized.

Name	Type	Description
trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*.

snapshot

Name	Type	Description
autodelete	autodelete	
autodelete_enabled	boolean	Specifies whether snapshot autodelete is currently enabled on this volume. This field will no longer be supported in a future release. Use autodelete.enabled instead.
autodelete_trigger	string	Specifies when the system should trigger an autodelete of snapshots. When set to *volume*, autodelete is triggered based on volume fullness. When set to *snap_reserve*, autodelete is triggered based on snapshot reserve fullness. The default value is *volume*. This field will no longer be supported in a future release. Use autodelete.trigger instead.
reserve_available	integer	Size available for snapshots within the snapshot reserve, in bytes.
reserve_percent	integer	The space that has been set aside as a reserve for snapshot usage, in percent.
reserve_size	integer	Size in the volume that has been set aside as a reserve for snapshot usage, in bytes.

Name	Type	Description
space_used_percent	integer	Percentage of snapshot reserve size that has been used.
used	integer	The total space used by snapshots in the volume, in bytes.

space

Name	Type	Description
afs_total	integer	Total size of AFS, excluding snap-reserve, in bytes.
auto_adaptive_compression_footprint_data_reduction	integer	Savings achieved due to Auto Adaptive Compression, in bytes.
available	integer	The available space, in bytes.
available_percent	integer	The space available, as a percent.
block_storage_inactive_user_data	integer	The size that is physically used in the block storage of the volume and has a cold temperature. In bytes. This parameter is only supported if the volume is in an aggregate that is either attached to a cloud store or could be attached to a cloud store.
block_storage_inactive_user_data_percent	integer	Percentage of size that is physically used in the performance tier of the volume.
capacity_tier_footprint	integer	Space used by capacity tier for this volume in the FabricPool aggregate, in bytes.
capacity_tier_footprint_data_reduction	integer	Savings achieved in the space used by the capacity tier for this volume in the FabricPool aggregate, in bytes.
compaction_footprint_data_reduction	integer	Savings achieved due to Data Compaction, in bytes.

Name	Type	Description
cross_volume_dedupe_metafiles_footprint	integer	Cross volume deduplication metadata footprint, in bytes.
cross_volume_dedupe_metafiles_temporary_footprint	integer	Cross volume temporary deduplication metadata footprint, in bytes.
dedupe_metafiles_footprint	integer	Deduplication metadata footprint, in bytes.
dedupe_metafiles_temporary_footprint	integer	Temporary deduplication metadata footprint, in bytes.
delayed_free_footprint	integer	Delayed free blocks footprint, in bytes.
effective_total_footprint	integer	Volume footprint after efficiency savings, in bytes. effective total footprint represents total footprint after deducting auto adaptive compression and compaction savings. effective-footprint includes aggregate metadata used by volume.
expected_available	integer	Size that should be available for the volume, irrespective of available size in the aggregate, in bytes.
file_operation_metadata	integer	File operation metadata footprint, in bytes.
filesystem_size	integer	Total usable size of the volume, in bytes.
filesystem_size_fixed	boolean	Specifies whether the file system is to remain of the same size when set to true or to grow when set to false. This option is automatically set to true when a volume becomes SnapMirrored.
footprint	integer	Data used for this volume in the aggregate, in bytes.

Name	Type	Description
fractional_reserve	integer	Used to change the amount of space reserved for overwrites of reserved objects in a volume.
full_threshold_percent	integer	Volume full threshold percentage at which EMS warnings can be sent.
is_used_stale	boolean	Specifies if the virtual space used is stale.
large_size_enabled	boolean	Indicates if the support for large FlexVol volumes and large files is enabled on this volume. When configured to true, FlexVol volume size can reach up to 300TB and single file size can reach 128TB.
local_tier_footprint	integer	Space used by the local tier for this volume in the aggregate, in bytes.
logical_space	logical_space	
max_size	string	Indicates the maximum size supported for the FlexVol volume or for each constituent of the FlexGroup volume.
metadata	integer	Space used by the volume metadata in the aggregate, in bytes.
nearly_full_threshold_percent	integer	Volume nearly full threshold percentage at which EMS warnings can be sent.
over_provisioned	integer	The amount of space not available for this volume in the aggregate, in bytes.
overwrite_reserve	integer	Reserved space for overwrites, in bytes.
overwrite_reserve_used	integer	Overwrite logical reserve space used, in bytes.

Name	Type	Description
percent_used	integer	Percentage of the volume size that is used.
performance_tier_footprint	integer	Space used by the performance tier for this volume in the FabricPool aggregate, in bytes.
physical_used	integer	Size that is physically used in the volume, in bytes. Physical used is effective total footprint which is equivalent to total footprint after deducting auto adaptive compression and compaction savings. Physical-used also includes aggregate metadata used by volume.
physical_used_percent	integer	Size that is physically used in the volume, as a percentage.
size	integer	Total provisioned size. The default size is equal to the minimum size of 20MB, in bytes.
size_available_for_snapshots	integer	Available space for snapshots from snap-reserve, in bytes.
snapmirror_destination_footprint	integer	SnapMirror destination footprint, in bytes.
snapshot	snapshot	
snapshot_reserve_unusable	integer	Snapshot reserve that is not available for snapshot creation, in bytes.
snapshot_spill	integer	Space used by the snapshot copies beyond the snap-reserve, in bytes.
total_footprint	integer	Data and metadata used for this volume in the aggregate, in bytes.
total_metadata	integer	Space used by the total metadata in the volume, in bytes.

Name	Type	Description
total_metadata_footprint	integer	Space used by the volume metadata footprint in the aggregate, in bytes.
used	integer	The virtual space used (includes volume reserves) before storage efficiency, in bytes.
used_by_afs	integer	The space used by Active Filesystem, in bytes.
user_data	integer	User data, in bytes.
volume_guarantee_footprint	integer	Space reserved for future writes in the volume, in bytes.

access

Raw count and latency data for access operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

audit

Raw count and latency data for audit operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

dir

Raw count and latency data for directory-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

file

Raw count and latency data for file-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

other

Raw count and latency data for create operations on objects other than files, directories and symlinks.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

symlink

Raw count and latency data for symlink-create operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

create

Raw count and latency data for create operations.

getattr

Raw count and latency data for getattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

link

Raw count and latency data for link operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lock

Raw count and latency data for lock operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

lookup

Raw count and latency data for lookup operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

open

Raw count and latency data for open operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

read

Raw count and latency data for read operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

readdir

Raw count and latency data for readdir operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

readlink

Raw count and latency data for readlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

rename

Raw count and latency data for rename operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

setattr

Raw count and latency data for setattr operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

unlink

Raw count and latency data for unlink operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

watch

Raw count and latency data for watch operations. These statistics are only applicable for CIFS protocol operations.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.

Name	Type	Description
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • Introduced in: 9.11 • x-nullable: true

write

Raw count and latency data for write operations, including histograms categorizing operations by size and latency.

Name	Type	Description
count	integer	Number of operations of the given type performed on this volume.
total_time	integer	The raw data component latency in microseconds measured within ONTAP for all operations of the given type. • example: 200 • readOnly: 1 • x-ntap-advanced: true • Introduced in: 9.11 • x-nullable: true
volume_protocol_latency_histogram_counts	array[integer]	
volume_protocol_latency_histogram_labels	array[string]	Labels for the latency histogram, ranging from <2us to >20s.
volume_protocol_size_histogram_counts	array[integer]	
volume_protocol_size_histogram_labels	array[string]	Labels for the size histogram, ranging from <4KB to >1024KB.

cifs_ops_raw

Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

cloud

These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

flexcache_raw

Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
cache_miss_blocks	integer	Blocks retrieved from origin in case of a cache miss. This can be divided by the raw client_requested_blocks and multiplied by 100 to calculate the cache miss percentage.
client_requested_blocks	integer	Total blocks requested by the client.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.

nfs_ops_raw

Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

Name	Type	Description
cifs_ops_raw	cifs_ops_raw	Raw data component performance values for CIFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
cloud	cloud	These are raw performance numbers (IOPS and latency) for the cloud store. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. These numbers are relevant only for volumes hosted on FabricPools.
flexcache_raw	flexcache_raw	Performance numbers for FlexCache used to measure cache effectiveness.

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation.
nfs_ops_raw	nfs_ops_raw	Raw data component performance values for NFS operations on this volume, including number of operations and raw latency, in microseconds for each operation. The values are cumulative and increase while the volume is online.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

SVM containing the volume. Required on POST.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

tiering

Name	Type	Description
min_cooling_days	integer	This parameter specifies the minimum number of days that user data blocks of the volume must be cooled before they can be considered cold and tiered out to the cloud tier. Note that this parameter is only used for tiering purposes and does not affect the reporting of inactive data. The value specified should be greater than the frequency with which applications in the volume shift between different sets of data. This parameter cannot be set when volume tiering policy is either "none" or "all". The default value of this parameter depends on the volume's tiering policy. See the tiering policy section of this documentation for corresponding default values. If the tiering policy on the volume gets changed, then this parameter will be reset to the default value corresponding to the new tiering policy.
object_tags	array[string]	This parameter specifies tags of a volume for objects stored on a FabricPool-enabled aggregate. Each tag is a key,value pair and should be in the format "key=value".

Name	Type	Description
policy	string	Policy that determines whether the user data blocks of a volume in a FabricPool will be tiered to the cloud store when they become cold. FabricPool combines flash (performance tier) with a cloud store into a single aggregate. Temperature of a volume block increases if it is accessed frequently and decreases when it is not. Valid in POST or PATCH. all ‐ This policy allows tiering of both snapshots and active file system user data to the cloud store as soon as possible by ignoring the temperature on the volume blocks. auto ‐ This policy allows tiering of both snapshot and active file system user data to the cloud store none ‐ Volume blocks will not be tiered to the cloud store. snapshot_only ‐ This policy allows tiering of only the volume snapshots not associated with the active file system. The default tiering policy is "snapshot-only" for a FlexVol volume and "none" for a FlexGroup volume. The default minimum cooling period for the "snapshot-only" tiering policy is 2 days and for the "auto" tiering policy is 31 days.

volume

Name	Type	Description
_tags	array[string]	Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings.
access_time_enabled	boolean	Indicates whether or not access time updates are enabled on the volume.
activity_tracking	activity_tracking	

Name	Type	Description
aggregates	array[aggregates]	Aggregate(s) hosting the volume. Optional.
aggressive_readahead_mode	string	Specifies the `aggressive_readahead_mode` enabled on the volume. When set to *file_prefetch*, on a file read, the system aggressively issues readaheads for all of the blocks in the file and retains those blocks in a cache for a finite period of time. When the option is set to *sequential_read*, the system aggressively prefetches the file completely, or to a certain length based on the file size limit, and continues as the read makes progress. If the option is set to *cross_file_sequential_read*, then the system aggressively prefetches multiple files completely, or to a certain length, and continues as the read makes progress.
analytics	analytics	
anti_ransomware	anti_ransomware	Anti-ransomware related information of the volume.
application	application	
asynchronous_directory_delete	asynchronous_directory_delete	Configuration for asynchronous directory delete from the client. This is only supported on Flexible volumes and FlexGroup volumes.
autosize	autosize	
clone	clone	

Name	Type	Description
cloud_retrieval_policy	string	This parameter specifies the cloud retrieval policy for the volume. This policy determines which tiered out blocks to retrieve from the capacity tier to the performance tier. The available cloud retrieval policies are "default" policy retrieves tiered data based on the underlying tiering policy. If the tiering policy is 'auto', tiered data is retrieved only for random client driven data reads. If the tiering policy is 'none' or 'snapshot_only', tiered data is retrieved for random and sequential client driven data reads. If the tiering policy is 'all', tiered data is not retrieved. "on_read" policy retrieves tiered data for all client driven data reads. "never" policy never retrieves tiered data. "promote" policy retrieves all eligible tiered data automatically during the next scheduled scan. It is only supported when the tiering policy is 'none' or 'snapshot_only'. If the tiering policy is 'snapshot_only', the only data brought back is the data in the AFS. Data that is only in a snapshot copy stays in the cloud and if tiering policy is 'none' then all data is retrieved.
cloud_write_enabled	boolean	Indicates whether or not cloud writes are enabled on the volume. NFS writes to this volume are sent to the cloud directly instead of the local performance tier. This feature is only available on volumes in FabricPools.
comment	string	A comment for the volume. Valid in POST or PATCH.
consistency_group	consistency_group	Consistency group the volume is part of.

Name	Type	Description
constituents	array[constituents]	FlexGroup volume constituents. FlexGroup volume constituents can be retrieved more efficiently by specifying "is_constituent=true" or "is_constituent=true&flexgroup.uuid=<flexgroup.uuid>" as query parameters.</flexgroup.uuid>
constituents_per_aggregate	integer	Specifies the number of times to iterate over the aggregates listed with the "aggregates.name" or "aggregates.uuid" when creating or expanding a FlexGroup volume. If a volume is being created on a single aggregate, the system creates a flexible volume if the "constituents_per_aggregate" field is not specified, or a FlexGroup volume if it is specified. If a volume is being created on multiple aggregates, the system always creates a FlexGroup volume. If a volume is being created on multiple aggregates and the "constituents_per_aggregate" field is not specified, the default value of the "constituents_per_aggregate" field is 4. The root constituent of a FlexGroup volume is always placed on the first aggregate in the list, unless 'optimize_aggregates' is specified as 'true'. If the "aggregates.name" or "aggregates.uuid" is specified in a PATCH request to expand an existing FlexGroup volume, the default value of the "constituents_per_aggregate" field is 1. The volume expand operation is only supported on FlexGroup volumes.
convert_unicode	boolean	Specifies whether directory Unicode format conversion is enabled when directories are accessed by NFS clients.

Name	Type	Description
create_time	string	Creation time of the volume. This field is generated when the volume is created.
efficiency	efficiency	
encryption	encryption	
error_state	error_state	
files	files	
flash_pool	flash_pool	
flexcache_endpoint_type	string	FlexCache endpoint type. none ‐ The volume is neither a FlexCache nor origin of any FlexCache. cache ‐ The volume is a FlexCache volume. origin ‐ The volume is origin of a FlexCache volume.
flexgroup	flexgroup	
granular_data	boolean	State of granular data on the volume. This setting is `true` by default when creating an AWS S3 FlexGroup volume via a POST request and `false` by default for creating any other type of FlexGroup volume via a POST request. On FlexVol volumes, the setting is always `false`, as only FlexGroup volumes support this feature. Once enabled, this setting can only be disabled by restoring a snapshot. Earlier versions of ONTAP (pre 9.12) are not compatible with this feature. Therefore, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the setting was enabled. • Introduced in: 9.12 • x-nullable: true

Name	Type	Description
granular_data_mode	string	Mode of granular data on the volume. This setting defaults to `basic` when the `granular_data` parameter is set to `true`, but can be specified at the time of creation via a POST request. Earlier versions of ONTAP (pre 9.12) are not compatible with the `basic` setting. Therefore, when set to `basic`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `basic` mode was enabled. Earlier versions of ONTAP (pre 9.16) are not compatible with the `advanced` setting. Therefore, when set to `advanced`, reverting to an earlier version of ONTAP is not possible unless this volume is deleted or restored to a snapshot that was taken before the `advanced` mode was enabled. • enum: ["disabled", "basic", "advanced"] • Introduced in: 9.16 • x-nullable: true
guarantee	guarantee	
has_dir_index_public	boolean	Specifies whether the volume has directories with public index files.
is_dir_index_transfer_enabled	boolean	When set to true, this field enables support for directory index transfer.
is_object_store	boolean	Specifies whether the volume is provisioned for an object store server.
is_svm_root	boolean	Specifies whether the volume is a root volume of the SVM it belongs to.

Name	Type	Description
max_dir_size	integer	Maximum directory size. This value sets maximum size, in bytes, to which a directory can grow. The default maximum directory size for FlexVol volumes is model-dependent, and optimized for the size of system memory. Before increasing the maximum directory size, involve technical support.
movement	movement	Volume movement. All attributes are modify, that is, not writable through POST. Set PATCH state to destination_aggregate to initiate a volume move operation. Volume movement on FlexGroup volume constituents are not supported.
msid	integer	The volume's Master Set ID.
name	string	Volume name. The name of volume must start with an alphabetic character (a to z or A to Z) or an underscore (_). The name must be 197 or fewer characters in length for FlexGroup volumes, and 203 or fewer characters in length for all other types of volumes. Volume names must be unique within an SVM. Required on POST.
nas	nas	
nodes	array[nodes]	List of the nodes hosting the volume.
qos	qos	QoS information
queue_for_encryption	boolean	Specifies whether the volume is queued for encryption.
quota	quota	Quotas track the space or file usage of a user, group, or qtree in a FlexVol volume or a FlexGroup volume.

Name	Type	Description
rebalancing	rebalancing	Configuration and runtime properties involving non-disruptive volume capacity rebalancing for a FlexGroup volume.
scheduled_snapshot_naming_scheme	string	Naming Scheme for automatic snapshots: • create_time - Automatic snapshots are saved as per the start of their current date and time. • ordinal - Latest automatic snapshot copy is saved as <scheduled_frequency>.0 and subsequent copies will follow the create_time naming convention.</scheduled_frequency>
size	integer	Physical size of the volume, in bytes. The minimum size for a FlexVol volume is 20MB and the minimum size for a FlexGroup volume is 200MB per constituent. The recommended size for a FlexGroup volume is a minimum of 100GB per constituent. For all volumes, the default size is equal to the minimum size.
sizing_method	string	When expanding a FlexGroup volume, this specifies whether to add new constituents, or to resize the current constituents.
snaplock	snaplock	
snapmirror	snapmirror	Specifies attributes for SnapMirror protection.
snapshot_count	integer	Number of snapshots in the volume.

Name	Type	Description
snapshot_directory_access_enabled	boolean	This field, if true, enables the visible ".snapshot" directory from the client. The ".snapshot" directory will be available in every directory on the volume.
snapshot_locking_enabled	boolean	Specifies whether or not snapshot copy locking is enabled on the volume.
snapshot_policy	snapshot_policy	This is a reference to the snapshot policy.
space	space	
state	string	Volume state. Client access is supported only when volume is online and junctioned. Taking volume to offline or restricted state removes its junction path and blocks client access. When volume is in restricted state some operations like parity reconstruction and iron on commit are allowed. The 'mixed' state applies to FlexGroup volumes only and cannot be specified as a target state. An 'error' state implies that the volume is not in a state to serve data.
status	array[string]	Describes the current status of a volume.

Name	Type	Description
style	string	The style of the volume. If "style" is not specified, the volume type is determined based on the specified aggregates or license. Specifying a single aggregate, without "constituents_per_aggregate", creates a flexible volume. Specifying multiple aggregates, or a single aggregate with "constituents_per_aggregate", creates a FlexGroup volume. When the UDO License is installed, and no aggregates are specified, the system automatically provisions a FlexGroup volume on system selected aggregates. Specifying a volume "style" creates a volume of that type. For example, if the style is "flexvol", you must specify a single aggregate. If the style is "flexgroup", the system either uses the specified aggregates or automatically provisions aggregates if there are no specified aggregates. The style "flexgroup_constituent" is not supported when creating a volume. flexvol ‐ flexible volumes and FlexClone volumes flexgroup ‐ FlexGroup volumes flexgroup_constituent ‐ FlexGroup volume constituents.
tiering	tiering	
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

Name	Type	Description
validate_only	boolean	Validate the volume move or volume conversion operations and their parameters, without actually performing the operation.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage files and directories

Storage volumes volume.uuid files path endpoint overview

Overview

This API is used to read a file, write to a file, retrieve a list of files and directories, and retrieve or modify certain properties of files and directories. The path field is used to specify the path to the directory or file to be acted on. The path field requires using "%2E" to represent "." and "%2F" to represent "/" for the path provided.

File data

Read and write data from/to a named file. To read a file, the Accept request HTTP header must be specified as multipart/form-data, and a value for the `length` query property, which represents the number of bytes to be read, must be specified. The API will fail if the length of data being read/written exceeds 1 MB. This API should only be used on normal files or streams associated with files. The results for other file types, such as LUNs is undefined.

To write to an existing file or create a new file, the user must specify Content-Type as “multipart/form-data”. The “application/json” Content-Type is supported for the files endpoint for file metadata operations. POST, PATCH and GET operations with “application/json” can be used to create a directory, modify metadata fields on a file,

and get directory or file metadata information. POST and PATCH operations created with the Content-Type set to 'application/json' are not supported for use with the *data* field.
The following APIs are used to read or write data to a file:

– GET /api/storage/volumes/{volume.uuid}/files/{path}?byte_offset=0&length=40 -H "Accept: multipart/form-data"

– POST /api/storage/volumes/{volume.uuid}/files/{path} -H "Content-Type: multipart/form-data" --form "file=the data to be written to the new file"

– PATCH /api/storage/volumes/{volume.uuid}/files/{path}?byte_offset=10 -H "Content-Type: multipart/form-data" --form "file=the new data to be written or overwritten to the existing file starting at byte_offset"

Listing directories and files

A list of files and directories and their properties can be retrieved for a specified path.

The following APIs are used to view a list of files and directories:

– GET /api/storage/volumes/{volume.uuid}/files

– GET /api/storage/volumes/{volume.uuid}/files/{path}

– GET /api/storage/volumes/{volume.uuid}/files/{path}?fields=*

File information

The metadata and detailed information about a single directory or file can be retrieved by setting the `return_metadata` query property to `true`. The information returned includes type, creation_time, modified_time, changed_time, accessed_time, unix_permissions, owner_id, group_id, size, hard_links_count, inode_number, is_empty, bytes_used, unique_bytes, inode_generation, is_vm_aligned, is_junction, links, and analytics (if requested). NOTE: unique_bytes is an expensive property and will not be returned unless specifically requested in a future release.

The following API is used to view the properties of a single file or directory:

– GET /api/storage/volumes/{volume.uuid}/files/{path}?return_metadata=true

File usage

Custom details about the usage of a file can be retrieved by specifying a value for the `byte_offset` and `length` query properties.

The following API is used to view the unique bytes, and bytes used, by a file based on the range defined by `byte_offset` and `length`:

– GET /api/storage/volumes/{volume.uuid}/files/{path}?return_metadata=true&byte_offset={int}&length={int}

Create a directory

The following API is used to create a directory:

– POST /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "type" : "directory", "unix-permissions" :

"644"}'

Delete an entire directory

A directory can be deleted. The behavior of this call is equivalent to rm -rf.

The following API is used to delete an entire directory:

– DELETE /api/storage/volumes/{volume.uuid}/files/{path}?recurse=true

Delete a file or an empty directory

The following API is used to delete a file or an empty directory:

– DELETE /api/storage/volumes/{volume.uuid}/files/{path}

– DELETE /api/storage/volumes/{volume.uuid}/files/{path}?recurse=false

File system analytics

File system analytics provide a quick method for obtaining information summarizing properties of all files within any directory tree of a volume. When file system analytics are enabled on a volume, `analytics.*` fields may be requested, and will be populated in the response records corresponding to directories. The API does not support file system analytics for requests that are made beyond the boundary of the specified `volume.uuid`.

The following APIs are used to obtain analytics information for a directory:

– GET /api/storage/volumes/{volume.uuid}/files/{path}?fields=analytics

– GET /api/storage/volumes/{volume.uuid}/files/{path}?fields=**

QoS

QoS policies and settings enforce Service Level Objectives (SLO) on a file. A pre-created QoS policy can be used by specifying the `qos.name` or `qos.uuid` properties.

The following APIs are used to assign a QoS policy to a file:

– PATCH /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "qos_policy.name" : "policy" }'

– PATCH /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "qos_policy.uuid" : "b89bc5dd-94a3-11e8-a7a3-0050568edf84" }'

Symlinks

The following APIs are used to create a symlink and read the contents of a symlink:

– POST /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "target" : "directory2/file1" }'

– GET /api/storage/volumes/{volume.uuid}/files/{path}?return_metadata=true&fields=target

Rename a file or a directory

The following API can be used to rename a file or a directory. Note that you need to provide the path relative to the root of the volume in the `path` body parameter.

– PATCH /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "path" : "directory1/directory2" }'

– PATCH /api/storage/volumes/{volume.uuid}/files/{path} -d '{ "path" : "directory1/directory2/file1" }'

Examples

Writing to a new file

```
# The API:
POST /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/volumes/54c06ce2-5430-11ea-
90f9-005056a73aff/files/aNewFile" -H "Content-Type: multipart/form-data"
--form "file=the data to be written to the new file"
```

Writing to an existing file

```
# The API:
PATCH /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/volumes/54c06ce2-5430-11ea-
90f9-005056a73aff/files/aNewFile?byte_offset=39" -H "Content-Type:
multipart/form-data" --form "file=*here is a little more data"
```

Reading a file

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/54c06ce2-5430-11ea-
90f9-005056a73aff/files/aNewFile?byte_offset=0&length=100" -H "Accept:
multipart/form-data"

# Response for file data:
--ec51b3541741ade7
Content-Disposition: form-data; name="bytes_read"
Content-Type: text/plain
66
--ec51b3541741ade7
Content-Disposition: form-data; filename="aNewFile"
Content-Type: application/octet-stream
the data to be written to the new file*here is a little more data
--ec51b3541741ade7--
```

Creating a directory

You can use the POST request to create a directory.

```
# The API:
POST /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/dir1"  -H 'accept: application/hal+json' -d '{
"type" : "directory", "unix_permissions" : "644" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "path": "dir1",
    "type": "directory",
    "unix_permissions": 644
  }
]
 }
```

Creating a stream on a file

```
# The API:
POST /api/storage/volumes/{volume.uuid}/files/{path}?overwrite=true

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/volumes/54c06ce2-5430-11ea-
90f9-005056a73aff/files/aNewFile?overwrite=true&byte_offset=-
1&stream_name=someStream" -H "Content-Type: multipart/form-data" --form
"file=the data to be written to the new file"
```

Retrieving the list of files in a directory

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/d1%2Fd2%2Fd3"

# Response for file records:
{
"records": [
  {
    "path": "d1/d2/d3",
    "name": ".",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3%2F%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2F%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
    "name": "..",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
```

```
005056aca658/files/d1%2Fd2%2Fd3%2F%2E%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2F%2E%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
    "name": "f1",
    "type": "file",
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2File1?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
    "name": "d5",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3%2Fd5"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2Fd5?return_metadata=true"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3"
  }
}
}
```

Retrieving a list of files based on file type

You can filter the list of files you retrieve based on multiple file types by including a query parameter in the following format type="file\|symlink"

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/d1%2Fd2%2Fd3?type=file&#124;directory"

# Response for file records:
{
"records": [
  {
    "path": "d1/d2/d3",
    "name": ".",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3%2F%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2F%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
    "name": "..",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3%2F%2E%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2F%2E%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
```

```
    "name": "f1",
    "type": "file",
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2File1?return_metadata=true"
      }
    }
  },
  {
    "path": "d1/d2/d3",
    "name": "d5",
    "type": "directory",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3%2Fd5"
      },
      "metadata": {
        "href": "/api/storage/volumes/e8274d79-3bba-11ea-b780-
005056a7d72a/files/d1%2Fd2%2Fd3%2Fd5?return_metadata=true"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d1%2Fd2%2Fd3"
  }
}
}
```


Retrieving the properties of a directory or a file

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}?return_metadata=true

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/d1%2Fd2%2Fd3%2Ff1?return_metadata=true"

# Response for file properties:
{
"records": [
  {
    "path": "d1/d2/d3/f1",
    "name": "",
    "type": "file",
    "creation_time": "2019-06-12T21:27:28-04:00",
    "modified_time": "2019-06-12T21:27:28-04:00",
    "changed_time": "2019-06-12T21:27:28-04:00",
    "accessed_time": "2019-06-12T21:27:28-04:00",
    "unix_permissions": 644,
    "owner_id": 54738,
    "group_id": 30,
    "size": 200,
    "hard_links_count": 1,
    "inode_number": 1233,
    "bytes_used": 4096,
    "unique_bytes": 4096,
    "inode_generation": 214488325,
    "is_vm_aligned": false,
    "is_junction": false
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/volumes/da8bb06c-823e-11e9-b790-
005056acdcb0/files/d1%2Fd2%2Fd3%2Ff1?return_metadata=true"
  }
}
}
```

Creating a symlink to a relative path

You can use the POST request to create a symlink.

```
# The API:
POST /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X POST "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/symlink1"  -H 'accept: application/hal+json' -d '{
"target" : "d1/f1"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "path": "symlink1",
    "target": "d1/f1"
  }
]
}
```

Retrieving the target of a symlink

You can use the GET request to view the target of a symlink.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/symlink1?return_metadata=true&fields=target"

# The response:
{
"records": [
  {
    "path": "symlink1",
    "target": "d1/f1"
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/volumes/54c06ce2-5430-11ea-90f9-
005056a73aff/files/symlink1?return_metadata=true&fields=target"
  }
}
}
```

Retrieving the usage information for a file

You can use the GET request to retrieve the unique bytes held in a file with or without specifying the offset. NOTE: unique_bytes is an expensive property and will not be returned unless specifically requested in a future release.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/f1?return_metadata=true&byte_offset=100&length=200"

# The response:
{
"records": [
  {
    "path": "d1/d2/d3/f1",
    "type": "file",
    "creation_time": "2019-06-12T21:27:28-04:00",
    "modified_time": "2019-06-12T21:27:28-04:00",
    "changed_time": "2019-06-12T21:27:28-04:00",
    "accessed_time": "2019-06-12T21:27:28-04:00",
    "unix_permissions": 644,
    "owner_id": 54738,
    "group_id": 30,
    "size": 200,
    "hard_links_count": 1,
    "inode_number": 1233,
    "bytes_used": 4096,
    "unique_bytes": 4096,
    "inode_generation": 214488325,
    "is_vm_aligned": false,
    "is_junction": false
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/volumes/cb6b139-8d21-11e9-b926-
05056aca658/files/f1?return_metadata=true&byte_offset=100&length=200"
  }
}
}
```

Retrieving all information (including analytics) for a directory

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}
```

```
# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/1ef5d1b2-f9d7-11e9-
8043-00505682f860/files/d1?return_metadata=true&fields=**"

# Response for all fields of the directory:
{
"records": [
  {
    "svm": {
      "uuid": "58a996a2-f9d5-11e9-8043-00505682f860",
      "_links": {
        "self": {
          "href": "/api/svm/svms/58a996a2-f9d5-11e9-8043-00505682f860"
        }
      }
    },
    "volume": {
        "uuid": "1ef5d1b2-f9d7-11e9-8043-00505682f860",
        "_links": {
          "self": {
            "href": "/api/storage/volumes/1ef5d1b2-f9d7-11e9-8043-
00505682f860"
          }
      }
    },
    "path": "d1",
    "type": "directory",
    "creation_time": "2019-10-28T23:04:13+00:00",
    "modified_time": "2019-10-28T23:10:30+00:00",
    "changed_time": "2019-10-28T23:10:30+00:00",
    "accessed_time": "2019-10-28T23:10:38+00:00",
    "unix_permissions": 755,
    "owner_id": 1002,
    "group_id": 65533,
    "size": 4096,
    "hard_links_count": 5,
    "inode_number": 96,
    "is_empty": false,
    "bytes_used": 4096,
    "inode_generation": 214514951,
    "is_vm_aligned": false,
    "is_junction": false,
    "analytics": {
      "file_count": 668,
      "bytes_used": 209657856,
      "subdir_count": 18,
```

```
      "by_modified_time": {
        "bytes_used": {
          "values": [
            0,
            0,
            0,
            0,
            3112960,
            0,
            14041088,
            20545536,
            0,
            57933824,
            61947904,
            68804608,
            188686336,
            0,
            0,
            0,
            20971520,
            0
          ],
          "percentages": [
            0,
            0,
            0,
            0,
            1.48,
            0,
            6.7,
            9.8,
            0,
            27.63,
            29.55,
            32.82,
            90,
            0,
            0,
            0,
            10,
            0
          ],
          "labels": [
            "2019-W42",
            "2019-W41",
            "2019-W40",
```

```
            "2019-W39",
            "2019-W38",
            "2019-10",
            "2019-09",
            "2019-08",
            "2019-Q4",
            "2019-Q3",
            "2019-Q2",
            "2019-Q1",
            "2019",
            "2018",
            "2017",
            "2016",
            "--2015",
            "unknown"
          ]
        }
      },
      "by_accessed_time": {
        "bytes_used": {
          "values": [
            102760448,
            1867776,
            1245184,
            2179072,
            1556480,
            105873408,
            9027584,
            8093696,
            105873408,
            23969792,
            32382976,
            26460160,
            188686336,
            0,
            0,
            0,
            20971520,
            0
          ],
          "percentages": [
            49.01,
            0.89,
            0.59,
            1.04,
            0.74,
```

```
            50.5,
            4.31,
            3.86,
            50.5,
            11.43,
            15.45,
            12.62,
            90,
            0,
            0,
            0,
            10,
            0
          ],
          "labels": [
            "2019-W42",
            "2019-W41",
            "2019-W40",
            "2019-W39",
            "2019-W38",
            "2019-10",
            "2019-09",
            "2019-08",
            "2019-Q4",
            "2019-Q3",
            "2019-Q2",
            "2019-Q1",
            "2019",
            "2018",
            "2017",
            "2016",
            "--2015",
            "unknown"
          ]
        }
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/storage/volumes/1ef5d1b2-f9d7-11e9-8043-
00505682f860/files/d1?return_metadata=true&fields=**"
  }
}
```

```
}
```

Retrieving file system analytics information for a set of histogram buckets

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-
05056aca658/files/d3?type=directory&fields=analytics&analytics.histogram_b
y_time_labels=2019-Q3,2019-Q2,2019-Q1,2018-Q4"

# Response with analytics data
{
"records": [
  {
    "path": "d3",
    "name": ".",
    "type": "directory",
    "analytics": {
      "file_count": 44,
      "bytes_used": 244240384,
      "subdir_count": 14,
      "by_modified_time": {
        "bytes_used": {
          "values": [
            57344,
            29720576,
            196141056,
            57344
          ],
          "percentages": [
            0.02,
            12.17,
            80.31,
            0.02
          ]
        }
      },
      "by_accessed_time": {
        "bytes_used": {
          "values": [
            69632,
            244170752,
```

```
            0,
            0
          ],
          "percentages": [
            0.03,
            99.97,
            0,
            0
          ]
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2F%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2F%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d3",
    "name": "..",
    "type": "directory",
    "analytics": {
      "file_count": 515,
      "bytes_used": 3034574848,
      "subdir_count": 23,
      "by_modified_time": {
        "bytes_used": {
          "values": [
            61440,
            1756479488,
            214622208,
            1191936
          ],
          "percentages": [
            0,
            57.88,
            7.07,
            0.04
          ]
        }
```

```
      },
      "by_accessed_time": {
        "bytes_used": {
          "values": [
            282624,
            3034292224,
            0,
            0
          ],
          "percentages": [
            0.01,
            99.99,
            0,
            0
          ]
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2F%2E%2E"
      },
      "metadata": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2F%2E%2E?return_metadata=true"
      }
    }
  },
  {
    "path": "d3",
    "name": "d5",
    "type": "directory",
    "analytics": {
      "file_count": 10,
      "bytes_used": 47648768,
      "subdir_count": 4,
      "by_modified_time": {
        "bytes_used": {
          "values": [
            0,
            29638656,
            0,
            0
          ],
          "percentages": [
```

```
            0,
            62.20,
            0,
            0
          ]
        }
      },
      "by_accessed_time": {
        "bytes_used": {
          "values": [
            0,
            47648768,
            0,
            0
          ],
          "percentages": [
            0,
            100,
            0,
            0
          ]
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2Fd5"
      },
      "metadata": {
        "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3%2Fd5?return_metadata=true"
      }
    }
  }
],
"num_records": 3,
"analytics": {
  "by_modified_time": {
    "bytes_used": {
      "labels": [
        "2019-Q3",
        "2019-Q2",
        "2019-Q1",
        "2018-Q4"
      ]
```

```
    }
  },
  "by_accessed_time": {
    "bytes_used": {
      "labels": [
        "2019-Q3",
        "2019-Q2",
        "2019-Q1",
        "2018-Q4"
      ]
    }
  }
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/cb6b1b39-8d21-11e9-b926-
005056aca658/files/d3?type=directory&fields=analytics&analytics.histogram_
by_time_labels=2019-Q3,2019-Q2,2019-Q1,2018-Q4"
  }
}
}
```

Identifying the largest subdirectories

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/1ef5d1b2-f9d7-11e9-
8043-
00505682f860/files/d1?fields=analytics.bytes_used&type=directory&order_by=
analytics.bytes_used%20desc"

# Response with the largest subdirectories sorted by their usage:
{
"records": [
  {
    "path": "d1",
    "name": "..",
    "type": "directory",
    "analytics": {
      "bytes_used": 56623104
    }
  },
  {
```

```
    "path": "d1",
    "name": ".",
    "type": "directory",
    "analytics": {
      "bytes_used": 35651584
    }
  },
  {
    "path": "d1",
    "name": "biggest",
    "type": "directory",
    "analytics": {
      "bytes_used": 17825792
    }
  },
  {
    "path": "d1",
    "name": "bigger",
    "type": "directory",
    "analytics": {
      "bytes_used": 10485760
    }
  },
  {
    "path": "d1",
    "name": "big",
    "type": "directory",
    "analytics": {
      "bytes_used": 5242880
    }
  }
],
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/storage/volumes/1ef5d1b2-f9d7-11e9-8043-
00505682f860/files/d1?fields=analytics.bytes_used&type=directory&order_by=
analytics.bytes_used%20desc"
  }
}
}
```


Assigning a QoS policy to a file

You can use the PATCH request to assign a QoS policy to a file.

```
# The API:
PATCH /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Ffile1" -d '{ "qos_policy": { "name":
"policy" }}'

# The response:
{}
```

Retrieving QoS information for a file

You can use the GET request for all fields with return_metadata="true" to retrieve QoS information for the file.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/file?return_metadata=true&fields=**"

# The response:
{
"records": [
  {
    "svm": {
     "uuid": "42ee3002-67dd-11ea-8508-005056a7b8ac"
    },
    "volume": {
      "uuid": "c05eb66a-685f-11ea-8508-005056a7b8ac"
    },
    "path": "file",
    "type": "lun",
    "creation_time": "2020-03-17T10:58:40-04:00",
    "modified_time": "2020-03-24T18:15:40-04:00",
    "changed_time": "2020-03-24T18:15:40-04:00",
    "accessed_time": "2020-03-24T18:15:40-04:00",
    "unix_permissions": 644,
    "owner_id": 0,
    "group_id": 0,
    "size": 1048576,
    "hard_links_count": 2,
    "inode_number": 96,
    "bytes_used": 1056768,
    "inode_generation": 219748425,
    "is_vm_aligned": false,
    "is_junction": false,
    "is_snapshot": false,
    "qos_policy": {
      "name": "pg1",
      "uuid": "00725264-688f-11ea-8f10-005056a7b8ac"
    }
  }
] ,
"num_records": 1
}
```

Deleting an entire directory

You can use the DELETE request to remove an entire directory recursively.

```
# The API:
DELETE /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Fdirectory2?recurse=true"

# The response:
{
"job": {
  "uuid": "27d287e8-fcd4-11e9-b8a4-005056a7b97b",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/27d287e8-fcd4-11e9-b8a4-005056a7b97b"
    }
  }
}
}
```

Deleting an entire directory with specified throttling threshold

You can specify the maximum number of directory delete operations per second when removing an entire directory recursively.

```
# The API:
DELETE /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-
05056aca658/files/directory1%2Fdirectory2?recurse=true&throttle_deletion=1
00"

# The response:
{
"job": {
  "uuid": "27d287e8-fcd4-11e9-b8a4-005056a7b97b",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/27d287e8-fcd4-11e9-b8a4-005056a7b97b"
    }
  }
}
}
```

Deleting an empty directory

You can use the DELETE request to remove an empty directory.

```
# The API:
DELETE /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Fdirectory2"

# The response:
{}
```

Deleting a file

You can use the DELETE request to remove a file.

```
# The API:
DELETE /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Ffile2"

# The response:
{}
```

Renaming a file

You can use the PATCH request to rename a file.

```
# The API:
PATCH /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Fdirectory2%2Ffile1" -d '{ "path":
"directory1/file2" }'

# The response:
{}
```

File truncating

You can use the PATCH request to change the size of a file.

```
# The API:
PATCH /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/abc.txt" -d '{ "size":100 }'

# The response:
{}
```

Renaming a directory

You can use the PATCH request to rename a directory.

```
# The API:
PATCH /api/storage/volumes/{volume.uuid}/files/{path}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/storage/volumes/cb6b1b39-8d21-11e9-
b926-05056aca658/files/directory1%2Fdirectory2" -d '{ "path": "d3/d4" }'

# The response:
{}
```

Delete an existing file or directory

DELETE `/storage/volumes/{volume.uuid}/files/{path}`

Introduced In: 9.8

Deletes an existing file or directory. Query-based DELETE operations are not supported.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	The relative path of a directory in the volume. The path field requires using "%2E" to represent ".", "%2E%2E" to represent ".." and "%2F" to represent "/" for the path provided. Refer to "relative reference resolution" section in Getting started with the ONTAP REST API for considerations when using "..".
recurse	boolean	query	False	Delete an entire directory. The behavior of this call is equivalent to rm -rf. • Default value:

Name	Type	In	Required	Description
throttle_deletion	integer	query	False	The maximum number of directory delete operations per second. A valid throttle_deletion number is an integer from 10 to 100000.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
131102	Read-only file system.
131138	Directory not empty.
918235	A volume with UUID {volume.uuid} was not found.
918757	The specified clone parent volume with UUID {volume.uuid} does not exist.
6488081	The {field} field is not supported for DELETE operations.
6488110	A volume delete is not supported on this endpoint.
6684674	No such file or directory.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve files and directories

GET `/storage/volumes/{volume.uuid}/files/{path}`

Introduced In: 9.7

Retrieves a list of files and directories for a given directory or returns only the properties of a single given directory or file of a volume.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query property. See Requesting specific fields to learn more.

- `analytics`
- `qos_policy.name`
- `qos_policy.uuid`

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	Relative path of a file or directory in the volume. The path field requires using "%2E" to represent "." and "%2F" to represent "/" for the path provided.
byte_offset	integer	query	False	The file offset to start reading from. • Introduced in: 9.8
length	integer	query	False	Length of the range in bytes. • Introduced in: 9.8

Name	Type	In	Required	Description
return_metadata	boolean	query	False	If true, the request returns metadata for the the directory or file specified in the path. • Introduced in: 9.8 • Default value:
target	string	query	False	Filter by target • Introduced in: 9.8
qos_policy.uuid	string	query	False	Filter by qos_policy.uuid • Introduced in: 9.8
qos_policy.name	string	query	False	Filter by qos_policy.name • Introduced in: 9.8
changed_time	string	query	False	Filter by changed_time
fill_enabled	boolean	query	False	Filter by fill_enabled • Introduced in: 9.8
inode_generation	integer	query	False	Filter by inode_generation
group_id	integer	query	False	Filter by group_id
owner_id	integer	query	False	Filter by owner_id
volume.name	string	query	False	Filter by volume.name
inode_number	integer	query	False	Filter by inode_number

Name	Type	In	Required	Description
is_snapshot	boolean	query	False	Filter by is_snapshot • Introduced in: 9.8
size	integer	query	False	Filter by size
creation_time	string	query	False	Filter by creation_time
constituent.uuid	string	query	False	Filter by constituent.uuid • Introduced in: 9.10
constituent.name	string	query	False	Filter by constituent.name • Introduced in: 9.10
analytics.file_count	integer	query	False	Filter by analytics.file_count • Introduced in: 9.8
analytics.subdir_count	integer	query	False	Filter by analytics.subdir_count • Introduced in: 9.8
analytics.by_accessed_time.bytes_used.labels	string	query	False	Filter by analytics.by_accessed_time.bytes_used.labels • Introduced in: 9.8

Name	Type	In	Required	Description
analytics.by_accessed_time.bytes_used.oldest_label	string	query	False	Filter by analytics.by_accessed_time.bytes_used.oldest_label • Introduced in: 9.8
analytics.by_accessed_time.bytes_used.aged_data_metric	number	query	False	Filter by analytics.by_accessed_time.bytes_used.aged_data_metric • Introduced in: 9.17
analytics.by_accessed_time.bytes_used.values	integer	query	False	Filter by analytics.by_accessed_time.bytes_used.values • Introduced in: 9.8
analytics.by_accessed_time.bytes_used.percentages	number	query	False	Filter by analytics.by_accessed_time.bytes_used.percentages • Introduced in: 9.8
analytics.by_accessed_time.bytes_used.newest_label	string	query	False	Filter by analytics.by_accessed_time.bytes_used.newest_label • Introduced in: 9.8
analytics.report_time	string	query	False	Filter by analytics.report_time • Introduced in: 9.17

Name	Type	In	Required	Description
analytics.bytes_used	integer	query	False	Filter by analytics.bytes_used • Introduced in: 9.8
analytics.incomplete_data	boolean	query	False	Filter by analytics.incomplete_data • Introduced in: 9.12
analytics.by_modified_time.bytes_used.labels	string	query	False	Filter by analytics.by_modified_time.bytes_used.labels • Introduced in: 9.8
analytics.by_modified_time.bytes_used.oldest_label	string	query	False	Filter by analytics.by_modified_time.bytes_used.oldest_label • Introduced in: 9.8
analytics.by_modified_time.bytes_used.aged_data_metric	number	query	False	Filter by analytics.by_modified_time.bytes_used.aged_data_metric • Introduced in: 9.17
analytics.by_modified_time.bytes_used.values	integer	query	False	Filter by analytics.by_modified_time.bytes_used.values • Introduced in: 9.8

Name	Type	In	Required	Description
analytics.by_modified_time.bytes_used.percentages	number	query	False	Filter by analytics.by_modified_time.bytes_used.percentages • Introduced in: 9.8
analytics.by_modified_time.bytes_used.newest_label	string	query	False	Filter by analytics.by_modified_time.bytes_used.newest_label • Introduced in: 9.8
bytes_used	integer	query	False	Filter by bytes_used
unique_bytes	integer	query	False	Filter by unique_bytes • Introduced in: 9.8
unix_permissions	integer	query	False	Filter by unix_permissions
type	string	query	False	Filter by type
is_empty	boolean	query	False	Filter by is_empty
hard_links_count	integer	query	False	Filter by hard_links_count
is_junction	boolean	query	False	Filter by is_junction
modified_time	string	query	False	Filter by modified_time
accessed_time	string	query	False	Filter by accessed_time
overwrite_enabled	boolean	query	False	Filter by overwrite_enabled • Introduced in: 9.8

Name	Type	In	Required	Description
name	string	query	False	Filter by name
is_vm_aligned	boolean	query	False	Filter by is_vm_aligned

Name	Type	In	Required	Description
analytics.histogram_by_time_labels	array[string]	query	False	Request that returned analytics_histogram_by_time objects including values associated with the specified labels. As described in the object description, the labels may take the following forms: partial-date <tt>--</tt>partial-date partial-date <tt>--</tt> partial-date<tt>-</tt>-partial-date <tt>unknown</tt> Intervals that the system would not normally return may be specified. In this case, the appropriate values and percentages summarizing all files with a time-based attribute within the indicated period of time are calculated and returned in the response. However, there are some restrictions: Any partial-date specified as the beginning or end of an interval must be tracked by the system. Valid partial-dates may be determined by making an OPTIONS request to

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
analytics	analytics	Additional file system analytics information that is invariant amongst all elements in the collection. This property is only populated if file system analytics is enabled on the containing volume. This analytics object captures properties that are invariant amongst all elements included in the `records` array. The invariant properties are included here, rather than within the information for each element, to avoid returning an excessive amount of duplicated information when the collection is large.
num_records	integer	Number of records.
records	array[file_info]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ]
      }
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "metadata": {
          "href": "/api/resourcelink"
        },
```

```
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "accessed_time": "2019-06-12 11:00:16 -0400",
      "analytics": {
        "by_accessed_time": {
          "bytes_used": {
            "aged_data_metric": 15.23,
            "labels": [
              "2019-07",
              "2019-06",
              "2019-05",
              "2019",
              "2018",
              "--2017",
              "unknown"
            ],
            "newest_label": "2019-07",
            "oldest_label": "2019-07",
            "percentages": [
              0.1,
              11.24,
              0.18,
              15.75,
              0.75,
              83.5,
              0
            ],
            "values": [
              15925248,
              1735569408,
              27672576,
              2430595072,
              116105216,
              12889948160,
              0
            ]
          }
        },
        "by_modified_time": {
          "bytes_used": {
            "aged_data_metric": 15.23,
            "labels": [
              "2019-07",
              "2019-06",
```

```
            "2019-05",
            "2019",
            "2018",
            "--2017",
            "unknown"
          ],
          "newest_label": "2019-07",
          "oldest_label": "2019-07",
          "percentages": [
            0.1,
            11.24,
            0.18,
            15.75,
            0.75,
            83.5,
            0
          ],
          "values": [
            15925248,
            1735569408,
            27672576,
            2430595072,
            116105216,
            12889948160,
            0
          ]
        }
      },
      "bytes_used": 15436648448,
      "file_count": 21134,
      "report_time": "string",
      "subdir_count": 35
    },
    "bytes_used": 4096,
    "changed_time": "2019-06-12 11:00:16 -0400",
    "constituent": {
      "name": "fg__0001",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "creation_time": "2019-06-12 11:00:16 -0400",
    "group_id": 30,
    "hard_links_count": 1,
    "inode_generation": 214753547,
    "inode_number": 1695,
    "is_junction": "",
    "is_snapshot": "",
```

```
      "is_vm_aligned": "",
      "modified_time": "2019-06-12 11:00:16 -0400",
      "name": "string",
      "owner_id": 54738,
      "path": "string",
      "qos_policy": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "string",
        "uuid": "string"
      },
      "target": "string",
      "type": "file",
      "unique_bytes": 4096,
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917752	Volume is offline.
918235	A volume with UUID {volume.uuid} was not found.
918757	The specified clone parent volume with UUID {volume.uuid} does not exist.
6488109	Operation not supported on FlexCache volumes.

Error Code	Description
6684674	No such file or directory.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
labels	array[string]	Labels for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
labels	array[string]	Labels for this histogram

by_modified_time

File system analytics information, broken down by date of last modification.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

analytics

Additional file system analytics information that is invariant amongst all elements in the collection.

This property is only populated if file system analytics is enabled on the containing volume.

This analytics object captures properties that are invariant amongst all elements included in the `records` array. The invariant properties are included here, rather than within the information for each element, to avoid returning an excessive amount of duplicated information when the collection is large.

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.

_links

Name	Type	Description
metadata	href	
self	href	

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

analytics

Additional file system analytics information summarizing all descendants of a directory.

This property is only populated if file system analytics is enabled on the containing volume.

In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk
file_count	integer	Number of descendants
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
report_time	string	The date and time analytics information was collected.
subdir_count	integer	Number of sub directories

constituent

Name	Type	Description
name	string	FlexGroup volume constituent name.
uuid	string	FlexGroup volume constituent UUID.

_links

Name	Type	Description
self	href	

qos_policy

The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none".

> Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files.

Note that a QoS policy can be set on a file, or a file's volume, but not on both.

Name	Type	Description
_links	_links	
name	string	The name of the QoS policy. To remove the file from a QoS policy, set this property to an empty string "" or set it to "none" in a PATCH request.
uuid	string	The unique identifier of the QoS policy. Valid in PATCH.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_info

Information about a single file.

Name	Type	Description
_links	_links	
accessed_time	string	Last access time of the file in date-time format.
analytics	analytics	Additional file system analytics information summarizing all descendants of a directory. This property is only populated if file system analytics is enabled on the containing volume. In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.
bytes_used	integer	The actual number of bytes used on disk by this file. If byte_offset and length parameters are specified, this will return the bytes used by the file within the given range.
changed_time	string	Last time data or attributes changed on the file in date-time format.
constituent	constituent	
creation_time	string	Creation time of the file in date-time format.
fill_enabled	boolean	Returns "true" if the space reservation is enabled. The field overwrite_enabled must also be set to the same value as this field.
group_id	integer	The integer ID of the group of the file owner.
hard_links_count	integer	The number of hard links to the file.

Name	Type	Description
inode_generation	integer	Inode generation number.
inode_number	integer	The file inode number.
is_empty	boolean	Specifies whether or not a directory is empty. A directory is considered empty if it only contains entries for "." and "..". This element is present if the file is a directory. In some special error cases, such as when the volume goes offline or when the directory is moved while retrieving this info, this field might not get set.
is_junction	boolean	Returns "true" if the directory is a junction.
is_snapshot	boolean	Returns "true" if the directory is a snapshot.
is_vm_aligned	boolean	Returns true if the file is vm-aligned. A vm-aligned file is a file that is initially padded with zero-filled data so that its actual data starts at an offset other than zero. The amount by which the start offset is adjusted depends on the vm-align setting of the hosting volume.
modified_time	string	Last data modification time of the file in date-time format.
name	string	Name of the file.
overwrite_enabled	boolean	Returns "true" if the space reservation for overwrites is enabled. The field fill_enabled must also be set to the same value as this field.
owner_id	integer	The integer ID of the file owner.
path	string	Path of the file.

Name	Type	Description
qos_policy	qos_policy	The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none". Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files. Note that a QoS policy can be set on a file, or a file's volume, but not on both.
size	integer	The size of the file, in bytes.
target	string	The relative or absolute path contained in a symlink, in the form <some>/<path>.</path></some>
type	string	Type of the file.
unique_bytes	integer	Number of bytes uniquely held by this file. If byte_offset and length parameters are specified, this will return bytes uniquely held by the file within the given range.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). The first digit selects the set user ID(4), set group ID (2), and sticky (1) attributes. The second digit selects permissions for the owner of the file; the third selects permissions for other users in the same group; the fourth selects permissions for other users not in the group.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Write to an existing file with the supplied data

PATCH `/storage/volumes/{volume.uuid}/files/{path}`

Introduced In: 9.8

Writes to an existing file with the supplied data or modifies the size, name, space reservation information, QoS policy, or hole range information of a file. Query-based PATCH operations are not supported.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	Relative path of a file in the volume. The path field requires using "%2E" to represent "." and "%2F" to represent "/" for the path provided.
byte_offset	integer	query	False	Indicates the number of bytes into the file to begin writing. Use "-1" to append (default). Note that the byte-offset field is only supported for writing to a new or existing file, which requires specifying the Content-Type as 'multipart/form-data'.
stream_name	string	query	False	Name of stream associated with the file to write data to.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
accessed_time	string	Last access time of the file in date-time format.

Name	Type	Description
analytics	analytics	Additional file system analytics information summarizing all descendants of a directory. This property is only populated if file system analytics is enabled on the containing volume. In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.
bytes_used	integer	The actual number of bytes used on disk by this file. If byte_offset and length parameters are specified, this will return the bytes used by the file within the given range.
changed_time	string	Last time data or attributes changed on the file in date-time format.
constituent	constituent	
creation_time	string	Creation time of the file in date-time format.
fill_enabled	boolean	Returns "true" if the space reservation is enabled. The field overwrite_enabled must also be set to the same value as this field.
group_id	integer	The integer ID of the group of the file owner.
hard_links_count	integer	The number of hard links to the file.
inode_generation	integer	Inode generation number.
inode_number	integer	The file inode number.

Name	Type	Description
is_empty	boolean	Specifies whether or not a directory is empty. A directory is considered empty if it only contains entries for "." and "..". This element is present if the file is a directory. In some special error cases, such as when the volume goes offline or when the directory is moved while retrieving this info, this field might not get set.
is_junction	boolean	Returns "true" if the directory is a junction.
is_snapshot	boolean	Returns "true" if the directory is a snapshot.
is_vm_aligned	boolean	Returns true if the file is vm-aligned. A vm-aligned file is a file that is initially padded with zero-filled data so that its actual data starts at an offset other than zero. The amount by which the start offset is adjusted depends on the vm-align setting of the hosting volume.
modified_time	string	Last data modification time of the file in date-time format.
name	string	Name of the file.
overwrite_enabled	boolean	Returns "true" if the space reservation for overwrites is enabled. The field fill_enabled must also be set to the same value as this field.
owner_id	integer	The integer ID of the file owner.
path	string	Path of the file.

Name	Type	Description
qos_policy	qos_policy	The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none". Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files. Note that a QoS policy can be set on a file, or a file's volume, but not on both.
size	integer	The size of the file, in bytes.
target	string	The relative or absolute path contained in a symlink, in the form <some>/<path>.</path></some>
unique_bytes	integer	Number of bytes uniquely held by this file. If byte_offset and length parameters are specified, this will return bytes uniquely held by the file within the given range.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). The first digit selects the set user ID(4), set group ID (2), and sticky (1) attributes. The second digit selects permissions for the owner of the file; the third selects permissions for other users in the same group; the fourth selects permissions for other users not in the group.
volume	volume	

Example request


```
{
  "accessed_time": "2019-06-12 11:00:16 -0400",
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
```

```
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "bytes_used": 15436648448,
    "file_count": 21134,
    "report_time": "string",
    "subdir_count": 35
  },
  "bytes_used": 4096,
  "changed_time": "2019-06-12 11:00:16 -0400",
  "constituent": {
    "name": "fg__0001",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "creation_time": "2019-06-12 11:00:16 -0400",
  "group_id": 30,
  "hard_links_count": 1,
  "inode_generation": 214753547,
  "inode_number": 1695,
  "is_junction": "",
  "is_snapshot": "",
  "is_vm_aligned": "",
```

```
  "modified_time": "2019-06-12 11:00:16 -0400",
  "name": "string",
  "owner_id": 54738,
  "path": "string",
  "qos_policy": {
    "name": "string",
    "uuid": "string"
  },
  "target": "string",
  "unique_bytes": 4096,
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```


Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
918235	A volume with UUID {volume.uuid} was not found.
918757	The specified clone parent volume with UUID {volume.uuid} does not exist.
6488081	The {field} field is not supported for PATCH operations.
6488082	Failed to rename {path}.
6488083	Failed to rename {path} to {path} because a directory named {path} already exists.
6488111	The fields 'fill_enabled' and 'overwrite_enabled' are not supported in the directory modify operation.
6488117	Permission denied.
6488119	Operation not supported.

Also see the table of common errors in the Response body overview section of this documentation.

See Definitions

href

Name	Type	Description
href	string	

_links

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_modified_time

File system analytics information, broken down by date of last modification with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

analytics

Additional file system analytics information summarizing all descendants of a directory.

This property is only populated if file system analytics is enabled on the containing volume.

In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk
file_count	integer	Number of descendants
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
report_time	string	The date and time analytics information was collected.
subdir_count	integer	Number of sub directories

constituent

Name	Type	Description
name	string	FlexGroup volume constituent name.
uuid	string	FlexGroup volume constituent UUID.

qos_policy

The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none".

> Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files.

Note that a QoS policy can be set on a file, or a file's volume, but not on both.

Name	Type	Description
name	string	The name of the QoS policy. To remove the file from a QoS policy, set this property to an empty string "" or set it to "none" in a PATCH request.
uuid	string	The unique identifier of the QoS policy. Valid in PATCH.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_info

Information about a single file.

Name	Type	Description
accessed_time	string	Last access time of the file in date-time format.
analytics	analytics	Additional file system analytics information summarizing all descendants of a directory. This property is only populated if file system analytics is enabled on the containing volume. In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.
bytes_used	integer	The actual number of bytes used on disk by this file. If byte_offset and length parameters are specified, this will return the bytes used by the file within the given range.
changed_time	string	Last time data or attributes changed on the file in date-time format.
constituent	constituent	
creation_time	string	Creation time of the file in date-time format.
fill_enabled	boolean	Returns "true" if the space reservation is enabled. The field overwrite_enabled must also be set to the same value as this field.
group_id	integer	The integer ID of the group of the file owner.
hard_links_count	integer	The number of hard links to the file.

Name	Type	Description
inode_generation	integer	Inode generation number.
inode_number	integer	The file inode number.
is_empty	boolean	Specifies whether or not a directory is empty. A directory is considered empty if it only contains entries for "." and "..". This element is present if the file is a directory. In some special error cases, such as when the volume goes offline or when the directory is moved while retrieving this info, this field might not get set.
is_junction	boolean	Returns "true" if the directory is a junction.
is_snapshot	boolean	Returns "true" if the directory is a snapshot.
is_vm_aligned	boolean	Returns true if the file is vm-aligned. A vm-aligned file is a file that is initially padded with zero-filled data so that its actual data starts at an offset other than zero. The amount by which the start offset is adjusted depends on the vm-align setting of the hosting volume.
modified_time	string	Last data modification time of the file in date-time format.
name	string	Name of the file.
overwrite_enabled	boolean	Returns "true" if the space reservation for overwrites is enabled. The field fill_enabled must also be set to the same value as this field.
owner_id	integer	The integer ID of the file owner.
path	string	Path of the file.

Name	Type	Description
qos_policy	qos_policy	The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none". Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files. Note that a QoS policy can be set on a file, or a file's volume, but not on both.
size	integer	The size of the file, in bytes.
target	string	The relative or absolute path contained in a symlink, in the form <some>/<path>.</path></some>
unique_bytes	integer	Number of bytes uniquely held by this file. If byte_offset and length parameters are specified, this will return bytes uniquely held by the file within the given range.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). The first digit selects the set user ID(4), set group ID (2), and sticky (1) attributes. The second digit selects permissions for the owner of the file; the third selects permissions for other users in the same group; the fourth selects permissions for other users not in the group.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a new file with the supplied data

POST `/storage/volumes/{volume.uuid}/files/{path}`

Introduced In: 9.8

Creates a new file with the supplied data, a new directory or a new symlink.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
path	string	path	True	Relative path of a new file, directory or symlink. The path field requires using "%2E" to represent "." and "%2F" to represent "/" for the path provided.
byte_offset	integer	query	False	Indicates the number of bytes into the file to begin writing. Use "-1" to append (default). Note that the byte-offset field is only supported for writing to a new or existing file, which requires specifying the Content-Type as 'multipart/form-data'.
overwrite	boolean	query	False	If false, and the file exists, the write will fail. Default is false.
stream_name	string	query	False	Name of stream associated with the file to write data to.
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
accessed_time	string	Last access time of the file in date-time format.

Name	Type	Description
analytics	analytics	Additional file system analytics information summarizing all descendants of a directory. This property is only populated if file system analytics is enabled on the containing volume. In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.
bytes_used	integer	The actual number of bytes used on disk by this file. If byte_offset and length parameters are specified, this will return the bytes used by the file within the given range.
changed_time	string	Last time data or attributes changed on the file in date-time format.
constituent	constituent	
creation_time	string	Creation time of the file in date-time format.
group_id	integer	The integer ID of the group of the file owner.
hard_links_count	integer	The number of hard links to the file.
inode_generation	integer	Inode generation number.
inode_number	integer	The file inode number.
is_empty	boolean	Specifies whether or not a directory is empty. A directory is considered empty if it only contains entries for "." and "..". This element is present if the file is a directory. In some special error cases, such as when the volume goes offline or when the directory is moved while retrieving this info, this field might not get set.

Name	Type	Description
is_junction	boolean	Returns "true" if the directory is a junction.
is_snapshot	boolean	Returns "true" if the directory is a snapshot.
is_vm_aligned	boolean	Returns true if the file is vm-aligned. A vm-aligned file is a file that is initially padded with zero-filled data so that its actual data starts at an offset other than zero. The amount by which the start offset is adjusted depends on the vm-align setting of the hosting volume.
modified_time	string	Last data modification time of the file in date-time format.
name	string	Name of the file.
owner_id	integer	The integer ID of the file owner.
path	string	Path of the file.
target	string	The relative or absolute path contained in a symlink, in the form <some>/<path>.</path></some>
type	string	Type of the file.
unique_bytes	integer	Number of bytes uniquely held by this file. If byte_offset and length parameters are specified, this will return bytes uniquely held by the file within the given range.

Name	Type	Description
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). The first digit selects the set user ID(4), set group ID (2), and sticky (1) attributes. The second digit selects permissions for the owner of the file; the third selects permissions for other users in the same group; the fourth selects permissions for other users not in the group.
volume	volume	

Example request


```
{
  "accessed_time": "2019-06-12 11:00:16 -0400",
  "analytics": {
    "by_accessed_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "by_modified_time": {
      "bytes_used": {
        "aged_data_metric": 15.23,
        "labels": [
          "2019-07",
          "2019-06",
          "2019-05",
```

```
          "2019",
          "2018",
          "--2017",
          "unknown"
        ],
        "newest_label": "2019-07",
        "oldest_label": "2019-07",
        "percentages": [
          0.1,
          11.24,
          0.18,
          15.75,
          0.75,
          83.5,
          0
        ],
        "values": [
          15925248,
          1735569408,
          27672576,
          2430595072,
          116105216,
          12889948160,
          0
        ]
      }
    },
    "bytes_used": 15436648448,
    "file_count": 21134,
    "report_time": "string",
    "subdir_count": 35
  },
  "bytes_used": 4096,
  "changed_time": "2019-06-12 11:00:16 -0400",
  "constituent": {
    "name": "fg__0001",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "creation_time": "2019-06-12 11:00:16 -0400",
  "fill_enabled": true,
  "group_id": 30,
  "hard_links_count": 1,
  "inode_generation": 214753547,
  "inode_number": 1695,
  "is_junction": "",
  "is_snapshot": "",
```

```
    "is_vm_aligned": "",
    "modified_time": "2019-06-12 11:00:16 -0400",
    "name": "string",
    "overwrite_enabled": true,
    "owner_id": 54738,
    "path": "string",
    "target": "string",
    "type": "file",
    "unique_bytes": 4096,
    "volume": {
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
917505	The SVM does not exist.
917525	The volume in the symlink path does not exist in the SVM.
917698	Volume (vol name) in SVM (vserver) is not mounted in the namespace.
917698	The volume in the symlink path is not mounted in the namespace.
918235	A volume with UUID {volume.uuid} was not found.

Error Code	Description
918757	The specified clone parent volume with UUID {volume.uuid} does not exist.
6488064	This command is not supported.
6488065	The volume in the symlink path is invalid.
6488066	Mounting the unjunctioned volume in the symlink path failed.
6488069	Internal file error.
6488084	Failed to create {path} because the "unix_permissions" field was not specified.
6488085	Failed to create {path} because the "type" field was not specified.
6488118	File exists.
8257536	This operation is not supported for the system volume specified in the symlink path.
8257541	Failed to compute the SVM identification from this content.
8257542	This operation is not supported for the administrative SVM.
9437549	This operation is not allowed on SVMs with Infinite Volume.
13172837	This operation is not permitted because the SVM is locked for a migrate operation.
111411203	Failed to get the volume file system analytics report on the volume.
111411204	Internal error. Failed to retrieve the volume file system analytics report on the volume.
111411207	Volume file system analytics is not supported on volumes that contain LUNs.
111411209	Volume file system analytics is not supported on FlexCache volumes.
111411210	Volume file system analytics is not supported on audit staging volumes.
111411211	Volume file system analytics is not supported on object store server volumes.
111411212	Volume file system analytics is not supported on SnapMirror destination volumes.
111411215	Internal error. Volume file system analytics report timed out for volume volume.name in SVM svm.name.
111411216	Enabling or disabling volume file system analytics is not supported on individual FlexGroup constituents.

Error Code	Description
111411217	Volume file system analytics is not supported on SnapLock volumes.
111411230	Volume file system analytics is not supported on volumes that contain NVMe namespaces.
111412203	Volume file system analytics is not enabled on the volume.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

bytes_used

Number of bytes used on-disk, broken down by date of last access.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_accessed_time

File system analytics information, broken down by date of last access.

with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last access.

bytes_used

Number of bytes used on-disk, broken down by date of last modification.

Name	Type	Description
aged_data_metric	number	A score summarizing how old the data is. A higher value means the data is older.
labels	array[string]	Labels for this histogram

Name	Type	Description
newest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
oldest_label	string	Each label indicates the period of time the corresponding data is associated with. A label can take one of the following forms: a partial date in an extended ISO8601 representation an interval between partial dates in an extended ISO8601 representation, where "--" is used to separate the beginning and end of the interval the string literal "unknown" For partial dates and partial date intervals where components of a date are unspecified, the label allows for any valid normalized values the unspecified components might take. For example, the label "2017" allows for any time within the year 2017. Essentially, this is the fully specified interval 2017-01-01T00:00:00—2017-12-31T23:59:59. Similarly, the interval "2018-05—2018-07" allows for any time within the months of May, June, and July in 2018, corresponding to the fully specified interval 2018-05-01T00:00:00—2018-07-31T23:59:59. The following extensions to ISO8601 are used: Quarters may be specified. The form *yyyy*-Q*q* is used to represent the *q*th quarter of the year *yyyy*. Q1 consists of the months January, February, and March; Q2 consists of April, May, and June; Q3 consists of July, August, and September; Q4 consists of October, November, and December. For example, the label "2019-Q2" represents the second quarter of the year 2019, which corresponds to the interval 2019-04-01T00:00:00—2019-06-30T23:59:59. Either the beginning or end of an interval may be omitted. When the beginning is omitted, the interval includes points in time arbitrarily far in the past. When the end is omitted, the interval

Name	Type	Description
percentages	array[number]	Percentages for this histogram
values	array[integer]	Values for this histogram

by_modified_time

File system analytics information, broken down by date of last modification with any other time period. This usually occurs when the data was at some point associated with a time in the future.

Name	Type	Description
bytes_used	bytes_used	Number of bytes used on-disk, broken down by date of last modification.

analytics

Additional file system analytics information summarizing all descendants of a directory.

This property is only populated if file system analytics is enabled on the containing volume.

In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.

Name	Type	Description
by_accessed_time	by_accessed_time	File system analytics information, broken down by date of last access.
by_modified_time	by_modified_time	File system analytics information, broken down by date of last modification.
bytes_used	integer	Number of bytes used on-disk
file_count	integer	Number of descendants
incomplete_data	boolean	Returns true if data collection is incomplete for this directory tree.
report_time	string	The date and time analytics information was collected.
subdir_count	integer	Number of sub directories

constituent

Name	Type	Description
name	string	FlexGroup volume constituent name.
uuid	string	FlexGroup volume constituent UUID.

qos_policy

The QoS policy for the file. Both traditional and adaptive QoS policies are supported. If both `qos_policy.uuid` and `qos_policy.name` properties are specified in the same request, they must refer to the same QoS policy. To remove the file from a QoS policy, set the property `qos_policy.name` in a PATCH request to an empty string "" or "none".

> Files which are in use as a LUN cannot be assigned to a QoS policy, instead use PATCH on /storage/luns to assign a QoS policy for such files.

Note that a QoS policy can be set on a file, or a file's volume, but not on both.

Name	Type	Description
name	string	The name of the QoS policy. To remove the file from a QoS policy, set this property to an empty string "" or set it to "none" in a PATCH request.
uuid	string	The unique identifier of the QoS policy. Valid in PATCH.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

file_info

Information about a single file.

Name	Type	Description
accessed_time	string	Last access time of the file in date-time format.
analytics	analytics	Additional file system analytics information summarizing all descendants of a directory. This property is only populated if file system analytics is enabled on the containing volume. In the context of the `records` property of a GET /storage/volumes/{volume.uuid}/files/{path} call returns a large collection.
bytes_used	integer	The actual number of bytes used on disk by this file. If byte_offset and length parameters are specified, this will return the bytes used by the file within the given range.
changed_time	string	Last time data or attributes changed on the file in date-time format.
constituent	constituent	
creation_time	string	Creation time of the file in date-time format.
group_id	integer	The integer ID of the group of the file owner.
hard_links_count	integer	The number of hard links to the file.
inode_generation	integer	Inode generation number.
inode_number	integer	The file inode number.

Name	Type	Description
is_empty	boolean	Specifies whether or not a directory is empty. A directory is considered empty if it only contains entries for "." and "..". This element is present if the file is a directory. In some special error cases, such as when the volume goes offline or when the directory is moved while retrieving this info, this field might not get set.
is_junction	boolean	Returns "true" if the directory is a junction.
is_snapshot	boolean	Returns "true" if the directory is a snapshot.
is_vm_aligned	boolean	Returns true if the file is vm-aligned. A vm-aligned file is a file that is initially padded with zero-filled data so that its actual data starts at an offset other than zero. The amount by which the start offset is adjusted depends on the vm-align setting of the hosting volume.
modified_time	string	Last data modification time of the file in date-time format.
name	string	Name of the file.
owner_id	integer	The integer ID of the file owner.
path	string	Path of the file.
target	string	The relative or absolute path contained in a symlink, in the form <some>/<path>.</path></some>
type	string	Type of the file.

Name	Type	Description
unique_bytes	integer	Number of bytes uniquely held by this file. If byte_offset and length parameters are specified, this will return bytes uniquely held by the file within the given range.
unix_permissions	integer	UNIX permissions to be viewed as an octal number. It consists of 4 digits derived by adding up bits 4 (read), 2 (write), and 1 (execute). The first digit selects the set user ID(4), set group ID (2), and sticky (1) attributes. The second digit selects permissions for the owner of the file; the third selects permissions for other users in the same group; the fourth selects permissions for other users not in the group.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve historical performance metrics for a volume

GET `/storage/volumes/{volume.uuid}/metrics`

Introduced In: 9.7

Retrieves historical performance metrics for a volume.

Parameters

Name	Type	In	Required	Description
flexcache.bandwidth_savings	integer	query	False	Filter by flexcache.bandwidth_savings • Introduced in: 9.9
flexcache.cache_miss_percent	integer	query	False	Filter by flexcache.cache_miss_percent • Introduced in: 9.8
flexcache.status	string	query	False	Filter by flexcache.status • Introduced in: 9.8
flexcache.timestamp	string	query	False	Filter by flexcache.timestamp • Introduced in: 9.8
flexcache.duration	string	query	False	Filter by flexcache.duration • Introduced in: 9.8
timestamp	string	query	False	Filter by timestamp
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
latency.read	integer	query	False	Filter by latency.read
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
status	string	query	False	Filter by status
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
throughput.other	integer	query	False	Filter by throughput.other
cloud.timestamp	string	query	False	Filter by cloud.timestamp
cloud.iops.read	integer	query	False	Filter by cloud.iops.read
cloud.iops.total	integer	query	False	Filter by cloud.iops.total
cloud.iops.write	integer	query	False	Filter by cloud.iops.write
cloud.iops.other	integer	query	False	Filter by cloud.iops.other
cloud.duration	string	query	False	Filter by cloud.duration

Name	Type	In	Required	Description
cloud.latency.read	integer	query	False	Filter by cloud.latency.read
cloud.latency.total	integer	query	False	Filter by cloud.latency.total
cloud.latency.write	integer	query	False	Filter by cloud.latency.write
cloud.latency.other	integer	query	False	Filter by cloud.latency.other
cloud.status	string	query	False	Filter by cloud.status
volume.uuid	string	path	True	Unique identifier of the volume.

Name	Type	In	Required	Description
interval	string	query	False	The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows: • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "timestamp": "2017-01-25 06:20:13 -0500"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Performance numbers, such as IOPS latency and throughput.

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage volume snapshots

Storage volumes volume.uuid snapshots endpoint overview

Overview

A snapshot is the view of the filesystem as it exists at the time when the snapshot is created.

In ONTAP, different types of snapshots are supported, such as scheduled snapshots, user requested snapshots, SnapMirror snapshots, and so on.

ONTAP snapshot APIs allow you to create, modify, delete and retrieve snapshots.

ONTAP Bulk snapshot APIs allow you to create, modify, delete and retrieve snapshots on multiple volumes in one request.

Snapshot APIs

The following APIs are used to perform operations related to snapshots.

– POST /api/storage/volumes/{volume.uuid}/snapshots

– GET /api/storage/volumes/{volume.uuid}/snapshots

– GET /api/storage/volumes/{volume.uuid}/snapshots/{uuid}

– PATCH /api/storage/volumes/{volume.uuid}/snapshots/{uuid}

– DELETE /api/storage/volumes/{volume.uuid}/snapshots/{uuid}
 The following APIs are used to perform bulk operations related to snapshots.

– POST /api/storage/volumes/*/snapshots

– GET /api/storage/volumes/*/snapshots

– PATCH /api/storage/volumes/*/snapshots/{uuid}

– DELETE /api/storage/volumes/*/snapshots/{uuid}

Examples

Creating a snapshot

The POST operation is used to create a snapshot with the specified attributes.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots

# The call:
curl -X POST "https://<mgmt-
ip>/api/storage/volumes/{volume.uuid}/snapshots" -H "accept:
application/hal+json" -d '{"name": "snapshot_copy", "comment": "Store this
copy." }'

# The response:
HTTP/1.1 202 Accepted
Date: Wed, 13 Mar 2019 22:43:34 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/?name=snapshot_copy
Content-Length: 189
Content-Type: application/json
{
"num_records": 1,
"records": [
  {
    "volume": {
      "name": "v2"
    },
    "svm": {
      "uuid": "8139f958-3c6e-11e9-a45f-005056bbc848",
      "name": "vs0"
    },
    "name": "snapshot_copy",
    "comment": "Store this copy."
  }
],
```

```
"job": {
  "uuid": "6f68c85b-45e1-11e9-8fc7-005056bbc848",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6f68c85b-45e1-11e9-8fc7-005056bbc848"
    }
  }
}
}

# The Job:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 22:43:57 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 224
Content-Type: application/json
{
"uuid": "6f68c85b-45e1-11e9-8fc7-005056bbc848",
"description": "POST /api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/?name=snapshot_copy",
"state": "success",
"message": "success",
"code": 0
}
```

Retrieving snapshot attributes

The GET operation is used to retrieve snapshot attributes.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/volumes/{volume.uuid}/snapshots" -H "accept:
application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 21:14:06 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/json
```

```
Transfer-Encoding: chunked
{
"records": [
  {
    "uuid": "402b6c73-73a0-4e89-a58a-75ee0ab3e8c0",
    "name": "hourly.2019-03-13_1305",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-75ee0ab3e8c0"
      }
    }
  },
  {
    "uuid": "f0dd497f-efe8-44b7-a4f4-bdd3890bc0c8",
    "name": "hourly.2019-03-13_1405",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/f0dd497f-efe8-44b7-a4f4-bdd3890bc0c8"
      }
    }
  },
  {
    "uuid": "02701900-51bd-46b8-9c77-47d9a9e2ce1d",
    "name": "hourly.2019-03-13_1522",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/02701900-51bd-46b8-9c77-47d9a9e2ce1d"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots"
  }
}
}
```

Creating bulk snapshots

The POST operation is used to create a snapshot with the same name on multiple volumes in one request.

This operation accepts a volume UUID or volume name and SVM, and a snapshot name.
This operation only supports SnapMirror label attributes to be added to snapshots during creation.

```
# The API:
/api/storage/volumes/*/snapshots

# The call:
curl -k -u admin -X POST "https://<mgmt-
ip>/api/storage/volumes/*/snapshots" -H 'accept: application/hal+json' -d
'{"records": [{"volume.uuid":"e8815adb-5209-11ec-b4ad-005056bbc3e8",
"name":"snapshot_copy"},{ "volume.uuid":"efda9101-5209-11ec-b4ad-
005056bbc3e8", "name":"snapshot_copy"}]}'

# The response:
HTTP/1.1 202 Accepted
Date: Tue, 14 Dec 2021 20:18:13 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Location: /api/storage/volumes/*/snapshots/
Content-Length: 209
Content-Type: application/json
{
"num_records": 2,
"job": {
  "uuid": "f7130fc0-5d1a-11ec-b78c-005056bbb467",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f7130fc0-5d1a-11ec-b78c-005056bbb467"
    }
  }
}
}

# The Job:
HTTP/1.1 200 OK
Date: Tue, 14 Dec 2021 20:20:54 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
```

```
Content-Length: 258
Content-Type: application/json
Vary: Accept-Encoding
{
"uuid": "f7130fc0-5d1a-11ec-b78c-005056bbb467",
"description": "POST /api/storage/volumes/*/snapshots/",
"state": "success",
"message": "success",
"code": 0,
"start_time": "2021-12-14T15:18:13-05:00",
"end_time": "2021-12-14T15:18:13-05:00"
}
```

Retrieving snapshot advanced attributes

A collection GET request is used to calculate the amount of snapshot reclaimable space.
When the advanced privilege field 'reclaimable space' is requested, the API returns the amount of reclaimable space for the queried list of snapshots.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots?fields=reclaimable_space

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/volumes/{volume.uuid}/snapshots?fields=reclaimable_space&n
ame=hourly.2019-03-13_1305&#124;hourly.2019-03-13_1405&#124;hourly.2019-
03-13_1522" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 21:14:06 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/json
Transfer-Encoding: chunked
{
"records": [
  {
    "uuid": "402b6c73-73a0-4e89-a58a-75ee0ab3e8c0",
    "name": "hourly.2019-03-13_1305",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-75ee0ab3e8c0"
      }
```

```
    }
  },
  {
    "uuid": "f0dd497f-efe8-44b7-a4f4-bdd3890bc0c8",
    "name": "hourly.2019-03-13_1405",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/f0dd497f-efe8-44b7-a4f4-bdd3890bc0c8"
      }
    }
  },
  {
    "uuid": "02701900-51bd-46b8-9c77-47d9a9e2ce1d",
    "name": "hourly.2019-03-13_1522",
    "_links": {
      "self": {
        "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/02701900-51bd-46b8-9c77-47d9a9e2ce1d"
      }
    }
  }
],
"num_records": 3,
"reclaimable_space": 1567832,
"_links": {
  "self": {
    "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots"
  }
}
}
```


Retrieving snapshot advanced attributes

A collection GET request is used to calculate the delta between two snapshots.
When the advanced privilege field 'delta' is requested, the API returns the delta between the queried snapshots.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots?fields=delta

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/volumes/{volume.uuid}/snapshots?fields=delta&name=hourly.2
022-06-29_1105,hourly.2022-06-29_1205" -H "accept: application/hal+json"
```

```
# The response:
HTTP/1.1 200 OK
Connection: Keep-Alive
Content-Encoding: gzip
Content-Length: 378
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Type: application/hal+json
Date: Wed, 29 Jun 2022 18:37:11 GMT
Keep-Alive: timeout=5, max=99
Server: libzapid-httpd
Vary: Accept-Encoding
X-Content-Type-Options: nosniff
{
"records": [
  {
    "uuid": "52a2247a-7735-4a92-bc3c-e51df1fe502f",
    "name": "hourly.2022-06-29_1105",
    "delta": {
      "size_consumed": 675840,
      "time_elapsed": "PT3H27M45S"
    }
  },
  {
    "uuid": "b399eb34-44fe-4689-9fb5-c8f72162dd77",
    "name": "hourly.2022-06-29_1205",
    "delta": {
      "size_consumed": 507904,
      "time_elapsed": "PT2H27M45S"
    }
  }
],
"num_records": 2,
"delta": {
  "size_consumed": 167936,
  "time_elapsed": "PT1H"
}
}
```

Retrieving the attributes of a specific snapshot

The GET operation is used to retrieve the attributes of a specific snapshot.

```
# The API:
```

```
/api/storage/volumes/{volume.uuid}/snapshots/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/0353dc05-405f-11e9-
acb6-005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-75ee0ab3e8c0" -H
"accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 22:39:26 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 308
Content-Type: application/json
{
"volume": {
  "uuid": "0353dc05-405f-11e9-acb6-005056bbc848",
  "name": "v2",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-005056bbc848"
    }
  }
},
"uuid": "402b6c73-73a0-4e89-a58a-75ee0ab3e8c0",
"svm": {
  "uuid": "8139f958-3c6e-11e9-a45f-005056bbc848",
  "name": "vs0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/8139f958-3c6e-11e9-a45f-005056bbc848"
    }
  }
},
"name": "hourly.2019-03-13_1305",
"create_time": "2019-03-13T13:05:00-04:00",
"size": 122880,
"_links": {
  "self": {
    "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-75ee0ab3e8c0"
  }
}
}
```

Retrieving the advanced attributes of a specific snapshot

The GET operation is used to retrieve the attributes of a specific snapshot. Snapshot reclaimable space can be requested during a GET request.
When the advanced privilege field reclaimable space is requested, the API returns the amount of reclaimable space for the snapshot.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots/{uuid}?fields=reclaimable_spa
ce

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/0353dc05-405f-11e9-
acb6-005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-
75ee0ab3e8c0?fields=**" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 22:39:26 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 308
Content-Type: application/json
{
"volume": {
  "uuid": "0353dc05-405f-11e9-acb6-005056bbc848",
  "name": "v2",
  "_links": {
    "self": {
      "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-005056bbc848"
    }
  }
},
"uuid": "402b6c73-73a0-4e89-a58a-75ee0ab3e8c0",
"svm": {
  "uuid": "8139f958-3c6e-11e9-a45f-005056bbc848",
  "name": "vs0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/8139f958-3c6e-11e9-a45f-005056bbc848"
    }
  }
},
"name": "hourly.2019-03-13_1305",
"reclaimable_space": 167832,
"_links": {
```

```
  "self": {
    "href": "/api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/402b6c73-73a0-4e89-a58a-75ee0ab3e8c0"
  }
}
}
```

Retrieving snapshot advanced attributes

A collection GET request is used to calculate the delta between two snapshots.
When the advanced privilege field 'delta' is requested, the API returns the delta between the queried snapshots.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots?fields=delta

# The call:
curl -X GET "https://<mgmt-
ip>/api/storage/volumes/{volume.uuid}/snapshots?fields=delta&name=hourly.2
022-06-29_1105,hourly.2022-06-29_1205" -H "accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
Connection: Keep-Alive
Content-Encoding: gzip
Content-Length: 378
Content-Security-Policy: default-src 'self'; script-src 'self' 'unsafe-
inline'; style-src 'self' 'unsafe-inline'; img-src 'self' data:; frame-
ancestors: 'self'
Content-Type: application/hal+json
Date: Wed, 29 Jun 2022 18:37:11 GMT
Keep-Alive: timeout=5, max=99
Server: libzapid-httpd
Vary: Accept-Encoding
X-Content-Type-Options: nosniff
{
"records": [
  {
    "uuid": "52a2247a-7735-4a92-bc3c-e51df1fe502f",
    "name": "hourly.2022-06-29_1105",
    "delta": {
      "size_consumed": 675840,
      "time_elapsed": "PT3H27M45S"
    }
  },
  {
```

```
    "uuid": "b399eb34-44fe-4689-9fb5-c8f72162dd77",
    "name": "hourly.2022-06-29_1205",
    "delta": {
      "size_consumed": 507904,
      "time_elapsed": "PT2H27M45S"
    }
  }
],
"num_records": 2,
"delta": {
  "size_consumed": 167936,
  "time_elapsed": "PT1H"
}
}
```

Retrieving bulk snapshots

The bulk GET operation is used to retrieve snapshot attributes across all volumes.

```
# The API:
/api/storage/volumes/*/snapshots

# The call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/*/snapshots" -H
"accept: application/hal+json"

# The response:
HTTP/1.1 200 OK
{
"records": [
  {
    "volume": {
      "uuid": "966c285f-47f7-11ec-8407-005056bbc08f",
      "name": "v1"
    },
    "uuid": "3edba912-5507-4535-adce-e12fe5c0e31c",
    "name": "daily.2021-11-18_0010"
  },
  {
    "volume": {
      "uuid": "966c285f-47f7-11ec-8407-005056bbc08f",
      "name": "v1"
    },
    "uuid": "3ad61153-d5ef-495d-8e0e-5c3b8bbaf5e6",
    "name": "hourly.2021-11-18_0705"
  },
```

```
    {
      "volume": {
        "uuid": "99c974e3-47f7-11ec-8407-005056bbc08f",
        "name": "v2"
      },
      "uuid": "3dd0fa97-65d9-41ea-a99d-5ceb9d2f55c5",
      "name": "daily.2021-11-18_0010"
    },
    {
     "volume": {
       "uuid": "99c974e3-47f7-11ec-8407-005056bbc08f",
       "name": "v2"
     },
     "uuid": "6ca20a52-c342-4753-8865-3693fa9b7e23",
     "name": "hourly.2021-11-18_0705"
    },
  ],
  "num_records": 4
  }
```


Updating a snapshot

The PATCH operation is used to update the specific attributes of a snapshot.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots/{uuid}

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/0353dc05-405f-11e9-
acb6-005056bbc848/snapshots/16f7008c-18fd-4a7d-8485-a0e290d9db7f" -d
'{"name": "snapshot_copy_new" }' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Wed, 13 Mar 2019 22:50:44 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "6f7c3a82-45e2-11e9-8fc7-005056bbc848",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6f7c3a82-45e2-11e9-8fc7-005056bbc848"
    }
  }
}
}

# The Job:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 22:54:16 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 242
Content-Type: application/json
{
"uuid": "6f7c3a82-45e2-11e9-8fc7-005056bbc848",
"description": "PATCH /api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/16f7008c-18fd-4a7d-8485-a0e290d9db7f",
"state": "success",
"message": "success",
"code": 0
}
```

Updating bulk snapshots

The bulk PATCH operation is used to update the specific attributes of snapshots across volumes in a single request.

```
# The API:
/api/storage/volumes/*/snapshots

# The call:
curl -X PATCH  "https://<mgmt-ip>/api/storage/volumes/*/snapshots" -d
'{"records": [{"volume.uuid":"e8815adb-5209-11ec-b4ad-005056bbc3e8",
"svm.uuid":"d0e6def5-5209-11ec-b4ad-005056bbc3e8", "uuid":"f9b7714d-1166-
410a-b143-874f27969db6", "comment":"yay"},{"volume.uuid":"efda9101-5209-
11ec-b4ad-005056bbc3e8", "svm.uuid":"d0e6def5-5209-11ec-b4ad-
005056bbc3e8", "uuid":"514c82a7-bff7-48e2-a13c-5337b09ed41e",
"comment":"yay"}]}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
{
"job": {
  "uuid": "1e9a561f-520f-11ec-b4ad-005056bbc3e8",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/1e9a561f-520f-11ec-b4ad-005056bbc3e8"
    },
    "results": {
      "href": "/api/storage/volumes/*/snapshots?job_results_uuid=1e9a561f-
520f-11ec-b4ad-005056bbc3e8"
    }
  }
}
}

# The Job:
curl -u admin:<password> -k -X GET --header 'Content-Type:
application/json' --header 'Accept: application/json' 'https://<mgmt-
ip>/api/storage/volumes/*/snapshots?job_results_uuid=1e9a561f-520f-11ec-
b4ad-005056bbc3e8'
HTTP/1.1 200 OK
{
"records": [
  {
    "volume": {
      "uuid": "e8815adb-5209-11ec-b4ad-005056bbc3e8",
      "name": "v1"
    },
```

```
    "uuid": "f9b7714d-1166-410a-b143-874f27969db6",
    "svm": {
      "uuid": "d0e6def5-5209-11ec-b4ad-005056bbc3e8"
    },
    "name": "s1",
    "comment": "yay"
  },
  {
    "volume": {
      "uuid": "efda9101-5209-11ec-b4ad-005056bbc3e8",
      "name": "v2"
    },
    "uuid": "514c82a7-bff7-48e2-a13c-5337b09ed41e",
    "svm": {
      "uuid": "d0e6def5-5209-11ec-b4ad-005056bbc3e8"
    },
    "name": "s1",
    "comment": "yay"
  }
],
"num_records": 2
}
```


Deleting a snapshot

The DELETE operation is used to delete a snapshot.

```
# The API:
/api/storage/volumes/{volume.uuid}/snapshots/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/storage/volumes/0353dc05-405f-11e9-
acb6-005056bbc848/snapshots/16f7008c-18fd-4a7d-8485-a0e290d9db7f" -H
"accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Wed, 13 Mar 2019 22:57:51 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/json
{
"job": {
  "uuid": "6da1dfdd-45e3-11e9-8fc7-005056bbc848",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/6da1dfdd-45e3-11e9-8fc7-005056bbc848"
    }
  }
}
}

# The Job:
HTTP/1.1 200 OK
Date: Wed, 13 Mar 2019 23:02:46 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 243
Content-Type: application/json
{
"uuid": "6da1dfdd-45e3-11e9-8fc7-005056bbc848",
"description": "DELETE /api/storage/volumes/0353dc05-405f-11e9-acb6-
005056bbc848/snapshots/16f7008c-18fd-4a7d-8485-a0e290d9db7f",
"state": "success",
"message": "success",
"code": 0
}
```

Deleting bulk snapshots

The bulk DELETE operation is used to delete a snapshots across volumes in a single request.

```
# The API:
/api/storage/volumes/*/snapshots

# The call:
curl -X DELETE  "https://<mgmt-ip>/api/storage/volumes/*/snapshots" -d
'{"records": [{"volume.uuid":"e8815adb-5209-11ec-b4ad-005056bbc3e8",
"uuid":"f9b7714d-1166-410a-b143-874f27969db6"}, {"volume.uuid":"efda9101-
5209-11ec-b4ad-005056bbc3e8", "uuid":"1d55c97a-25f3-4366-bfa8-
9ea75c255469"}]}' -H "accept: application/hal+json"

# The response:
HTTP/1.1 202 Accepted
{
"job": {
  "uuid": "fe114ed7-520f-11ec-b4ad-005056bbc3e8",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/fe114ed7-520f-11ec-b4ad-005056bbc3e8"
    },
    "results": {
      "href": "/api/storage/volumes/*/snapshots?job_results_uuid=fe114ed7-
520f-11ec-b4ad-005056bbc3e8"
    }
  }
}
}

# The Job:
HTTP/1.1 200 OK
curl -u admin:<password> -k -X GET --header 'Content-Type:
application/json' --header 'Accept: application/json' 'https://<mgmt-
ip>/api/storage/volumes/*/snapshots?job_results_uuid=fe114ed7-520f-11ec-
b4ad-005056bbc3e8'
{
"records": [
],
"num_records": 0
}
```

Retrieve volume snapshots

GET `/storage/volumes/{volume.uuid}/snapshots`

Introduced In: 9.6

Retrieves a collection of volume snapshots.

Expensive properties

There is an added computational cost to retrieving the amount of reclaimable space for snapshots, as the calculation is done on demand based on the list of snapshots provided.

- `reclaimable_space`
- `delta`

Related ONTAP commands

- `snapshot show`
- `snapshot compute-reclaimable`
- `snapshot show-delta`

Learn more

- DOC /storage/volumes/{volume.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume
delta.time_elapsed	string	query	False	Filter by delta.time_elapsed • Introduced in: 9.12
delta.size_consumed	integer	query	False	Filter by delta.size_consumed • Introduced in: 9.12
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
snaplock_expiry_time	string	query	False	Filter by snaplock_expiry_time

Name	Type	In	Required	Description
reclaimable_space	integer	query	False	Filter by reclaimable_space • Introduced in: 9.10
expiry_time	string	query	False	Filter by expiry_time
uuid	string	query	False	Filter by uuid
snapmirror_label	string	query	False	Filter by snapmirror_label • Introduced in: 9.8
version_uuid	string	query	False	Filter by version_uuid • Introduced in: 9.11
provenance_volume.uuid	string	query	False	Filter by provenance_volume.uuid • Introduced in: 9.11
create_time	string	query	False	Filter by create_time
name	string	query	False	Filter by name
compress_savings	integer	query	False	Filter by compress_savings • Introduced in: 9.17
dedup_savings	integer	query	False	Filter by dedup_savings • Introduced in: 9.17

Name	Type	In	Required	Description
snaplock.expiry_time	string	query	False	Filter by snaplock.expiry_time • Introduced in: 9.15
snaplock.expired	boolean	query	False	Filter by snaplock.expired • Introduced in: 9.15
snaplock.time_until_expiry	string	query	False	Filter by snaplock.time_until_expiry • Introduced in: 9.15
vbn0_savings	integer	query	False	Filter by vbn0_savings • Introduced in: 9.17
logical_size	integer	query	False	Filter by logical_size • Introduced in: 9.12
size	integer	query	False	Filter by size • Introduced in: 9.9
owners	string	query	False	Filter by owners • Introduced in: 9.7
state	string	query	False	Filter by state
comment	string	query	False	Filter by comment
volume.name	string	query	False	Filter by volume.name

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.
num_records	integer	Number of records
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
records	array[snapshot]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "delta": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "size_consumed": 0,
    "time_elapsed": "string"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "comment": "string",
      "compress_savings": 1131223,
      "create_time": "2019-02-04 14:00:00 -0500",
      "dedup_savings": 1131223,
      "delta": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "size_consumed": 0,
        "time_elapsed": "string"
      },
      "expiry_time": "2019-02-04 14:00:00 -0500",
      "logical_size": 1228800,
      "name": "this_snapshot",
      "owners": [
        "string"
```

```
      ],
      "provenance_volume": {
        "uuid": "4cd8a442-86d1-11e0-ae1c-125648563413"
      },
      "size": "122880",
      "snaplock": {
        "expired": 1,
        "expiry_time": "2019-02-04 14:00:00 -0500",
        "time_until_expiry": "PT3H27M45S"
      },
      "snaplock_expiry_time": "2019-02-04 14:00:00 -0500",
      "snapmirror_label": "string",
      "state": "string",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "vbn0_savings": 1131223,
      "version_uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
918235	The specified volume is invalid.
9437613	The operation is not supported on FlexCache Volumes.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

snapshot_delta

Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
_links	_links	
size_consumed	integer	Indicates the space that has changed between two specified WAFL file systems, in bytes.
time_elapsed	string	Time elapsed between two specified WAFL file systems.

provenance_volume

Name	Type	Description
uuid	string	UUID for the volume that is used to identify the source volume in a mirroring relationship. When the mirroring relationship is broken, a volume's Instance UUID and Provenance UUID are made identical. An unmirrored volume's Provenance UUID is the same as its Instance UUID. This field is valid for flexible volumes only.

snaplock

Name	Type	Description
expired	boolean	Indicates whether a SnapLock snapshot has expired.
expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. It can also be used to extend the expiry time of a locked snapshot on a SnapLock for SnapVault destination consistency-group.
time_until_expiry	string	Indicates the remaining SnapLock expiry time of a locked snapshot, in seconds. This field is set only when the remaining time interval is less than 136 years.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snapshot

The snapshot object represents a point in time snapshot of a volume.

Name	Type	Description
_links	_links	
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.

Name	Type	Description
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	

Name	Type	Description
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.
snapmirror_label	string	Label for SnapMirror operations
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.

Name	Type	Description
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a volume snapshot

POST `/storage/volumes/{volume.uuid}/snapshots`

Introduced In: 9.6

Creates a volume snapshot.

Required properties

- `name` - Name of the snapshot to be created.

Recommended optional properties

- `comment` - Comment associated with the snapshot.
- `expiry_time` - snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
- `snapmirror_label` - Label for SnapMirror operations.
- `snaplock_expiry_time` - Expiry time for snapshot locking enabled volumes.

Related ONTAP commands

- `snapshot create`

Learn more

- DOC /storage/volumes/{volume.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.

Name	Type	Description
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.
snapmirror_label	string	Label for SnapMirror operations

Name	Type	Description
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.
volume	volume	

Example request

```
{
  "comment": "string",
  "compress_savings": 1131223,
  "create_time": "2019-02-04 14:00:00 -0500",
  "dedup_savings": 1131223,
  "delta": {
    "size_consumed": 0,
    "time_elapsed": "string"
  },
  "expiry_time": "2019-02-04 14:00:00 -0500",
  "logical_size": 1228800,
  "name": "this_snapshot",
  "owners": [
    "string"
  ],
  "provenance_volume": {
    "uuid": "4cd8a442-86d1-11e0-ae1c-125648563413"
  },
  "size": "122880",
  "snaplock": {
    "expired": 1,
    "expiry_time": "2019-02-04 14:00:00 -0500",
    "time_until_expiry": "PT3H27M45S"
  },
  "snaplock_expiry_time": "2019-02-04 14:00:00 -0500",
  "snapmirror_label": "string",
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vbn0_savings": 1131223,
  "version_uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
524479	The specified volume is not online or does not have enough space to create a snapshot.
1520351	Snapshot operation is not allowed.
525062	Cannot exceed maximum number of snapshots.
2621462	The specified SVM name does not exist.
525059	A snapshot with the specified name already exists.

Error Code	Description
1638461	Snapshots can only be created on read/write (RW) volumes.
1638477	User-created snapshot names cannot begin with the specified prefix.
1638518	The specified snapshot name is invalid.
1638532	Failed to create the snapshot on the specified volume because a revert operation is in progress.
1638537	Cannot determine the status of the snapshot create operation for the specified volume.
1638574	The "expiry-time" parameter is not supported for FlexGroup volumes.
1638616	Bulk snapshot create is not supported with multiple snapshot names.
1638617	Bulk snapshot create is not supported with volume names in a mixed-version cluster.
1638618	The property cannot be specified for snapshot create.
1638630	Snapshot create operation is not supported on destination of SnapMirror active sync relationship with policy-type "automated-failover-duplex".
1638644	POST, DELETE, and PATCH requests on the snapshot session endpoint are not supported on this platform.
92405873	Unable to create the snapshot for object store volumes.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

snapshot_delta

Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
size_consumed	integer	Indicates the space that has changed between two specified WAFL file systems, in bytes.
time_elapsed	string	Time elapsed between two specified WAFL file systems.

provenance_volume

Name	Type	Description
uuid	string	UUID for the volume that is used to identify the source volume in a mirroring relationship. When the mirroring relationship is broken, a volume's Instance UUID and Provenance UUID are made identical. An unmirrored volume's Provenance UUID is the same as its Instance UUID. This field is valid for flexible volumes only.

snaplock

Name	Type	Description
expired	boolean	Indicates whether a SnapLock snapshot has expired.

Name	Type	Description
expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. It can also be used to extend the expiry time of a locked snapshot on a SnapLock for SnapVault destination consistency-group.
time_until_expiry	string	Indicates the remaining SnapLock expiry time of a locked snapshot, in seconds. This field is set only when the remaining time interval is less than 136 years.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snapshot

The snapshot object represents a point in time snapshot of a volume.

Name	Type	Description
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.

Name	Type	Description
snapmirror_label	string	Label for SnapMirror operations
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.
volume	volume	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a volume snapshot

DELETE `/storage/volumes/{volume.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Deletes a Volume snapshot.

Related ONTAP commands

- `snapshot delete`

Learn more

- DOC /storage/volumes/{volume.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
uuid	string	path	True	Snapshot UUID

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
2	An invalid value was entered for one of the fields.
524481	Snapshot was not deleted because the associated volume is locked or fenced.
1638521	Snapshots can only be deleted on read/write (RW) volumes.
1638538	Cannot determine the status of the snapshot delete operation for the specified volume.
1638543	Failed to delete snapshot because it has an owner.
1638555	The specified snapshot has not expired or is locked.
1638600	The snapshot does not exist.
1638644	POST, DELETE, and PATCH requests on the snapshot session endpoint are not supported on this platform.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve volume snapshot details

GET `/storage/volumes/{volume.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Retrieves details of a specific volume snapshot.

Related ONTAP commands

- `snapshot show`

Learn more

- DOC /storage/volumes/{volume.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
uuid	string	path	True	Snapshot UUID
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.

Name	Type	Description
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	

Name	Type	Description
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.
snapmirror_label	string	Label for SnapMirror operations
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.

Name	Type	Description
volume	volume	

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "compress_savings": 1131223,
  "create_time": "2019-02-04 14:00:00 -0500",
  "dedup_savings": 1131223,
  "delta": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "size_consumed": 0,
    "time_elapsed": "string"
  },
  "expiry_time": "2019-02-04 14:00:00 -0500",
  "logical_size": 1228800,
  "name": "this_snapshot",
  "owners": [
    "string"
  ],
  "provenance_volume": {
    "uuid": "4cd8a442-86d1-11e0-ae1c-125648563413"
  },
  "size": "122880",
  "snaplock": {
    "expired": 1,
    "expiry_time": "2019-02-04 14:00:00 -0500",
    "time_until_expiry": "PT3H27M45S"
  },
  "snaplock_expiry_time": "2019-02-04 14:00:00 -0500",
  "snapmirror_label": "string",
  "state": "string",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
```

```
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
    "vbn0_savings": 1131223,
    "version_uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volume1",
      "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
    }
  }
```


Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
2	An invalid value was entered for one of the fields.
262197	An invalid field was specified in the request.
1638473	Snapshot tag not found.
1638503	The snapshot does not exist on the specified volume.
1638600	The snapshot does not exist.
1638615	Bulk operations for snapshots are not supported on multiple SVMs.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

snapshot_delta

Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
_links	_links	
size_consumed	integer	Indicates the space that has changed between two specified WAFL file systems, in bytes.
time_elapsed	string	Time elapsed between two specified WAFL file systems.

provenance_volume

Name	Type	Description
uuid	string	UUID for the volume that is used to identify the source volume in a mirroring relationship. When the mirroring relationship is broken, a volume's Instance UUID and Provenance UUID are made identical. An unmirrored volume's Provenance UUID is the same as its Instance UUID. This field is valid for flexible volumes only.

snaplock

Name	Type	Description
expired	boolean	Indicates whether a SnapLock snapshot has expired.
expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. It can also be used to extend the expiry time of a locked snapshot on a SnapLock for SnapVault destination consistency-group.
time_until_expiry	string	Indicates the remaining SnapLock expiry time of a locked snapshot, in seconds. This field is set only when the remaining time interval is less than 136 years.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update a volume snapshot

PATCH `/storage/volumes/{volume.uuid}/snapshots/{uuid}`

Introduced In: 9.6

Updates a Volume snapshot.

Related ONTAP commands

- `snapshot modify`
- `snapshot rename`

Learn more

- DOC /storage/volumes/{volume.uuid}/snapshots

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
uuid	string	path	True	Snapshot UUID
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.

Name	Type	Description
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.
snapmirror_label	string	Label for SnapMirror operations
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.
volume	volume	

Example request

```
{
  "comment": "string",
  "compress_savings": 1131223,
  "create_time": "2019-02-04 14:00:00 -0500",
  "dedup_savings": 1131223,
  "delta": {
    "size_consumed": 0,
    "time_elapsed": "string"
  },
  "expiry_time": "2019-02-04 14:00:00 -0500",
  "logical_size": 1228800,
  "name": "this_snapshot",
  "owners": [
    "string"
  ],
  "provenance_volume": {
    "uuid": "4cd8a442-86d1-11e0-ae1c-125648563413"
  },
  "size": "122880",
  "snaplock": {
    "expired": 1,
    "expiry_time": "2019-02-04 14:00:00 -0500",
    "time_until_expiry": "PT3H27M45S"
  },
  "snaplock_expiry_time": "2019-02-04 14:00:00 -0500",
  "snapmirror_label": "string",
  "state": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vbn0_savings": 1131223,
  "version_uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "volume": {
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

```
Status: 202, Accepted
```

Error

```
Status: Default
```

ONTAP Error Response Code

Error Code	Description
524508	The snapshot was not renamed because the name entered is not valid.
542797	The specified file or snapshot does not exist.
1638455	Failed to set comment for snapshot.
1638476	You cannot rename a snapshot created for use as a reference snapshot by other jobs.
1638477	User-created snapshot names cannot begin with the specified prefix.
1638518	The specified snapshot name is invalid.
1638522	Snapshots can only be renamed on read/write (RW) volumes.
1638523	Failed to set the specified SnapMirror label for the snapshot.

Error Code	Description
1638524	Adding SnapMirror labels is not allowed in a mixed version cluster.
1638539	Cannot determine the status of the snapshot rename operation for the specified volume.
1638554	Failed to set expiry time for the snapshot.
1638600	The snapshot does not exist.
1638644	POST, DELETE, and PATCH requests on the snapshot session endpoint are not supported on this platform.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

snapshot_delta

Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
size_consumed	integer	Indicates the space that has changed between two specified WAFL file systems, in bytes.
time_elapsed	string	Time elapsed between two specified WAFL file systems.

provenance_volume

Name	Type	Description
uuid	string	UUID for the volume that is used to identify the source volume in a mirroring relationship. When the mirroring relationship is broken, a volume's Instance UUID and Provenance UUID are made identical. An unmirrored volume's Provenance UUID is the same as its Instance UUID. This field is valid for flexible volumes only.

snaplock

Name	Type	Description
expired	boolean	Indicates whether a SnapLock snapshot has expired.

Name	Type	Description
expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. It can also be used to extend the expiry time of a locked snapshot on a SnapLock for SnapVault destination consistency-group.
time_until_expiry	string	Indicates the remaining SnapLock expiry time of a locked snapshot, in seconds. This field is set only when the remaining time interval is less than 136 years.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

volume

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

snapshot

The snapshot object represents a point in time snapshot of a volume.

Name	Type	Description
comment	string	A comment associated with the snapshot. This is an optional attribute for POST or PATCH.
compress_savings	integer	Savings due to compression at the time the snapshot was taken in bytes.
create_time	string	Creation time of the snapshot. It is the volume access time when the snapshot was created.
dedup_savings	integer	Savings due to dedup at the time the snapshot was taken in bytes.
delta	snapshot_delta	Reports the amount of space consumed between two WAFL file systems, in bytes. The two WAFL file systems should be specified in a comma-separated format using the "name" parameter. To determine the space consumed between a snapshot and the Active File System, only the snapshot name needs to be mentioned.

Name	Type	Description
expiry_time	string	The expiry time for the snapshot. This is an optional attribute for POST or PATCH. Snapshots with an expiry time set are not allowed to be deleted until the retention time is reached.
logical_size	integer	Size of the logical used file system at the time the snapshot is captured.
name	string	Snapshot. Valid in POST or PATCH.
owners	array[string]	
provenance_volume	provenance_volume	
reclaimable_space	integer	Space reclaimed when the snapshot is deleted, in bytes.
size	integer	Size of the active file system at the time the snapshot is captured. The actual size of the snapshot also includes those blocks trapped by other snapshots. On a snapshot deletion, the "size" amount of blocks is the maximum number of blocks available. On a snapshot restore, the "afs-used size" value will match the snapshot "size" value.
snaplock	snaplock	
snaplock_expiry_time	string	SnapLock expiry time for the snapshot, if the snapshot is taken on a SnapLock volume. A snapshot is not allowed to be deleted or renamed until the SnapLock ComplianceClock time goes beyond this retention time. This option can be set during snapshot POST and snapshot PATCH on snapshot locking enabled volumes. This field will no longer be supported in a future release. Use snaplock.expiry_time instead.

Name	Type	Description
snapmirror_label	string	Label for SnapMirror operations
state	string	State of the FlexGroup volume snapshot. In the "pre_conversion" state, the snapshot was created before converting the FlexVol to a FlexGroup volume. A recently created snapshot can be in the "unknown" state while the system is calculating the state. In the "partial" state, the snapshot is consistent but exists only on the subset of the constituents that existed prior to the FlexGroup's expansion. Partial snapshots cannot be used for a snapshot restore operation. A snapshot is in an "invalid" state when it is present in some FlexGroup constituents but not in others. At all other times, a snapshot is valid.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	The UUID of the snapshot in the volume that uniquely identifies the snapshot in that volume.
vbn0_savings	integer	Savings due vbn0 at the time the snapshot was taken in bytes.
version_uuid	string	The 128 bit identifier that uniquely identifies a snapshot and its logical data layout.
volume	volume	

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve clients

Storage volumes volume.uuid top-metrics clients endpoint overview

Overview

You can use this API to retrieve a list of clients with the most I/O activity for a specified volume, within the past several seconds. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` and `throughput` metrics. This API supports only returning one I/O activity type per request.

Approximate accounting and error bars

When too many clients have recent activity, some clients might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the clients that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of clients with most I/O activity

The API can sometimes fail to return the list of clients with the most I/O activity, due to the following reasons:

– The volume does not have the activity tracking feature enabled.

– The volume has not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of clients with the most

I/O activity.

Retrieve a list of the clients with the most I/O activity

For a report on the clients with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` I/O activity type into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of clients with the greatest number of average read operations per second. The current maximum number of clients returned by the API for an I/O activity type is 25.

– GET /api/storage/volumes/{volume.uuid}/top-metrics/clients

Examples

Retrieving a list of the clients with the greatest average number of write operations per second:

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/clients

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/clients?top_metric=iops.write"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "vol1"
    },
    "iops": {
      "write": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "client_ip": "172.28.71.128",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    }
  },
```

```
    {
      "volume": {
        "name": "vol1"
      },
      "iops": {
        "write": 1022,
        "error": {
          "lower_bound": 1022,
          "upper_bound": 1032
        }
      },
      "client_ip": "172.28.71.179",
      "svm": {
        "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
        "name": "vs1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
          }
        }
      }
    },
    {
      "volume": {
        "name": "vol1"
      },
      "iops": {
        "write": 345,
        "error": {
          "lower_bound": 345,
          "upper_bound": 355
        }
      },
      "client_ip": "172.28.51.62",
      "svm": {
        "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
        "name": "vs1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
          }
        }
      }
    }
  ],
  "num_records": 3,
```

```
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/top-metrics/clients?top_metric=iops.write"
  }
}
}
```

Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/clients?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
  "code": "124518418"
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/clients?top_metric=throughput.write"
  }
}
}
```

Retrieve clients with the most I/O activity

GET `/storage/volumes/{volume.uuid}/top-metrics/clients`

Introduced In: 9.10

Retrieves a list of clients with the most I/O activity.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
client_ip	string	query	False	Filter by client_ip
volume.name	string	query	False	Filter by volume.name
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
throughput.write	integer	query	False	Filter by throughput.write
throughput.read	integer	query	False	Filter by throughput.read
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.write	integer	query	False	Filter by iops.write
iops.read	integer	query	False	Filter by iops.read
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
incomplete_response_reason	incomplete_response_reason	Indicates that the metric report provides incomplete data.
notice	notice	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_client]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "incomplete_response_reason": {
    "code": "111411207",
    "message": "Partial data has been returned for this metric report.
Reason: The activity tracking report for this volume is not available
because the system is busy collecting tracking data."
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume"
  },
  "num_records": 1,
  "records": [
    {
      "client_ip": "192.168.185.170",
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 5,
        "write": 10
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
```

```
          },
          "read": 12,
          "write": 2
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518415	Failed to get the volume activity tracking report on volume volume.name in SVM svm.name.

Error Code	Description
124518416	Internal error. Volume activity tracking report timed out for volume volume.name in SVM svm.name.
124518417	Volume wildcard queries are not supported for activity tracking reports.
124518418	The activity tracking report for volume volume.name in SVM svm.name returned zero records. Check whether the volume has read/write traffic. Refer to the REST API documentation for more information.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
124518423	Volume activity tracking is not supported on the volume.
124519411	Volume activity tracking is not enabled on the volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

incomplete_response_reason

Indicates that the metric report provides incomplete data.

Name	Type	Description
code	string	Warning code indicating why partial data was reported.
message	string	A message describing the reason for partial data.

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_client

Information about a client's IO activity.

Name	Type	Description
client_ip	string	IP address of the client. Both IPv4 and IPv6 IP addresses are supported.
iops	iops	
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve directories

Storage volumes volume.uuid top-metrics directories endpoint overview

Overview

You can use this API to retrieve a list of directories with the greatest value performance metric or capacity metric for a specified volume. Use the `top_metric` parameter to specify which type of metric to filter for. This API is used to provide insight into performance metrics, namely `iops` and `throughput`, or capacity metrics such as `non_recursive_bytes_used`. This API only supports returning one metric per request.

Retrieve a list of the directories with the most I/O activity

For a report on the directories with the most I/O activity in the past several seconds returned in descending order, specify the performance metric type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the metric type is not specified, by default the API returns a list of the directories with the greatest number of the average read operations per second. The current maximum number of directories returned by the API for a metric type is 25.

Approximate accounting and error bars for the list of directories with the most I/O activity

When too many directories have recent activity, some directories might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the directories that would have otherwise been included might not be present in the final list returned by the API.

Retrieve a list of the largest directories

For a report on the largest directories returned in descending order, specify the capacity metric by passing the `non_recursive_bytes_used` property into the top_metric parameter. If the metric type is not specified, by default the API returns a list of directories with the greatest number of average read operations per second. The current maximum number of directories returned by the API for a metric type is 25.

Failure to return list of directories with most I/O activity

The API can sometimes fail to return the list of directories with the most I/O activity, due to the following reasons:

– The volume does not have the activity tracking feature enabled.

– The volume has not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of directories with the most I/O activity.

Failure to return list of largest directories

The API can sometimes fail to return the list of largest directories, due to the following reasons:

– The volume does not have file system analytics enabled.

– The volume’s file system analytics database version doesn’t support this report.

Failure to return pathnames

The API can sometimes fail to obtain filesystem pathnames for certain directories, either due to internal transient errors or if those directories have been recently deleted.
 In such cases, instead of the pathname, the API will return "{<volume_instance_uuid>.<fileid>}" for that directory.</fileid></volume_instance_uuid>

Examples

Retrieving a list of the directories with the greatest average number of read operations per second

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=iops.read"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "vol1",
    },
    "iops": {
      "read": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1505
      }
    },
    "path": "/dir1/dir2",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
```

```
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "vol1",
    },
    "iops": {
      "read": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1032
      }
    },
    "path": "/dir3/dir4",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir3%2Fdir4"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir3%2Fdir4?return_metadata=true"
```

```
      }
    }
  },
  {
    "volume": {
      "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
      "name": "vol1",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864"
        }
      }
    },
    "iops": {
      "read": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 355
      }
    },
    "path": "/dir12",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12?return_metadata=true"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
```

```
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/top-metrics/directories?top_metric=iops.read"
  }
}
}
```

Retrieving a list of the directories with the most traffic with failure in obtaining the pathnames for the directories:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=throughput.write"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 24,
      "error": {
        "lower_bound": 24,
        "upper_bound": 29
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:1232}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 12,
      "error": {
```

```
        "lower_bound": 12,
        "upper_bound": 22
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:6754}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 8,
      "error": {
        "lower_bound": 8,
        "upper_bound": 10
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:8654}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/top-metrics/directories?top_metric=throughput.write"
  }
}
}
```

Retrieving a list of the largest directories

The following example shows how to retrieve a list of the largest directories based on the non-recursive bytes used by the contents of a directory.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=non_recursive_bytes_used"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "vol1"
    },
    "non_recursive_bytes_used": 345,
    "path": "/dir1/dir2",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "vol1"
    },
    "non_recursive_bytes_used": 345,
    "path": "/dir3/dir4",
```

```
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir3%2Fdir4"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir3%2Fdir4?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "vol1"
    },
    "non_recursive_bytes_used": 345,
    "path": "/dir12",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12?return_metadata=true"
      }
    }
  }
```

```
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/top-metrics/directories?top_metric=non_recursive_bytes_used"
  }
}
}
```

Retrieving a list of the largest directories where incomplete data is reported

The following example retrieves a list of the largest directories when partial data is returned.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=non_recursive_bytes_used"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "vol1"
    },
    "non_recursive_bytes_used": 1022,
    "path": "/dir1/dir2",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
```

```
2df8e52ef864/files/dir1%2Fdir2?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "vol1"
    },
    "non_recursive_bytes_used": 261,
    "path": "/dir12",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    },
    "_links": {
      "directory": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12"
      },
      "metadata": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir12?return_metadata=true"
      }
    }
  }
],
"num_records": 2,
"incomplete_response_reason": {
  "message": "Partial data has been returned for this metric report.
Reason: Data collection for the large directory report is in progress.",
  "code": "111411234",
  "arguments": [
    {
      "message": "Data collection for the large directory report is in
progress."
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
```

```
2df8e52ef864/top-metrics/directories?top_metric=non_recursive_bytes_used"
  }
}
}
```

Retrieving a list of the largest directories when the file system analytics database version doesn’t support this report

The following example shows the behavior of the API when the file system analytics database version doesn’t support the large directory report.

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=non_recursive_bytes_used"

# The Response:
{
"records": [
],
"num_records": 0,
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/top-metrics/directories?top_metric=non_recursive_bytes_used"
  }
},
"error": {
  "message": "The large directory report for volume \"FV\" in Vserver
\"vs0\" is not available because the file system analytics database
version doesn't support this report. Use the \"volume analytics off\"
command to disable analytics on the volume, then use the \"volume
analytics on\" command to re-enable analytics.",
  "code": "124519410"
}
}
```

Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
  "code": "124518418"
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/directories?top_metric=throughput.write"
  }
}
}
```

Retrieve directories with the greatest value performance metric or capacity metric

GET `/storage/volumes/{volume.uuid}/top-metrics/directories`

Introduced In: 9.10

Retrieves a list of directories with the greatest value performance metric or capacity metric.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID

Name	Type	In	Required	Description
top_metric	string	query	False	Type of performance metric or capacity metric. • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write", "non_recursive_bytes_used"]
max_records_per_volume	integer	query	False	Max records per volume.
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.write	integer	query	False	Filter by iops.write
iops.read	integer	query	False	Filter by iops.read
path	string	query	False	Filter by path
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
non_recursive_bytes_used	integer	query	False	Filter by non_recursive_bytes_used • Introduced in: 9.12
volume.name	string	query	False	Filter by volume.name

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
throughput.write	integer	query	False	Filter by throughput.write
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
incomplete_response_reason	incomplete_response_reason	Indicates that the metric report provides incomplete data.
notice	notice	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_directory]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "incomplete_response_reason": {
    "code": "111411207",
    "message": "Partial data has been returned for this metric report.
Reason: Data collection for the large directory report is in progress."
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume."
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "metadata": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 10,
        "write": 5
      },
      "non_recursive_bytes_used": 300,
      "path": "/dir_abc/dir_123/dir_20",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
          },
          "name": "svm1",
          "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
        },
        "throughput": {
          "error": {
            "lower_bound": 34,
            "upper_bound": 54
          },
          "read": 3,
          "write": 20
        },
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.

Error Code	Description
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518415	Failed to get the volume activity tracking report on volume volume.name in SVM svm.name.
124518416	Internal error. Volume activity tracking report timed out for volume volume.name in SVM svm.name.
124518417	Volume wildcard queries are not supported for activity tracking reports.
124518418	The activity tracking report for volume volume.name in SVM svm.name returned zero records. Check whether the volume has read/write traffic. Refer to the REST API documentation for more information.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
124518423	Volume activity tracking is not supported on the volume.
124519410	The large directory report for volume volume.name in SVM svm.name is not available because the file system analytics database version doesn't support this report.
124519411	Volume activity tracking is not enabled on the volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

incomplete_response_reason

Indicates that the metric report provides incomplete data.

Name	Type	Description
code	string	Warning code indicating why partial data was reported.
message	string	A message describing the reason for partial data.

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

_links

Name	Type	Description
metadata	href	
self	href	

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.

Name	Type	Description
write	integer	Average number of write bytes received per second.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_directory

Information about a directory's IO metrics.

Name	Type	Description
_links	_links	
iops	iops	
non_recursive_bytes_used	integer	Non-recursive bytes used by the contents of a directory.
path	string	Path of the directory.
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve files

Storage volumes volume.uuid top-metrics files endpoint overview

Overview

You can use this API to retrieve a list of files with the most I/O activity for a specified volume, within the past several seconds. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` or `throughput` metrics. This API also supports only returning one I/O activity type per request.

Approximate accounting and error bars

When too many files have recent activity, some files might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the files that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of files with most I/O activity

The API can sometimes fail to return the list of files with the most I/O activity, due to the following reasons:

– The volume does not have the activity tracking feature enabled.

– The volume has not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of files with the most I/O

activity.

Failure to return pathnames

The API can sometimes fail to obtain the filesystem pathnames for certain files, either due to internal transient errors or if those files have been recently deleted.
 In such cases, instead of the pathname, the API will return "{<volume_instance_uuid>.<fileid>}" for that file.</fileid></volume_instance_uuid>

Retrieve a list of the files with the most I/O activity

For a report on the files with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of the files with the greatest number of the average read operations per second. The current maximum number of files returned by the API for an I/O activity type is 25.

– GET /api/storage/volumes/{volume.uuid}/top-metrics/files

Examples

Retrieving a list of the files with the greatest average number of write bytes received per second:

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/files

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/files?top_metric=throughput.write"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 24,
      "error": {
        "lower_bound": 24,
        "upper_bound": 29
      }
    },
    "path": "/d5/f5",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
```

```
        }
      }
    },
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/files/d5%2Ff5?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 12,
      "error": {
        "lower_bound": 12,
        "upper_bound": 22
      }
    },
    "path": "/d6/f6",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    },
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/files/d6%2Ff6?return_metadata=true"
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 8,
      "error": {
        "lower_bound": 8,
```

```
        "upper_bound": 10
      }
    },
    "path": "/d3/f3",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    },
    "_links": {
      "metadata": {
        "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/files/d3%2Ff3?return_metadata=true"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/top-metrics/files?top_metric=throughput.write"
  }
}
}
```


Retrieving a list of the files with the most traffic with failure in obtaining the pathnames for the files:


```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/files?top_metric=throughput.write"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 24,
```

```
      "error": {
        "lower_bound": 24,
        "upper_bound": 29
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:1232}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 12,
      "error": {
        "lower_bound": 12,
        "upper_bound": 22
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:6754}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  },
  {
    "volume": {
      "name": "fv"
    },
    "throughput": {
      "write": 8,
      "error": {
        "lower_bound": 8,
```

```
        "upper_bound": 10
      }
    },
    "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:8654}",
    "svm": {
      "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
        }
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-
005056ac0f77/top-metrics/files?top_metric=throughput.write"
  }
}
}
```


Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/files?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
  "code": "124518418"
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/files?top_metric=throughput.write"
  }
}
}
```

Retrieve files with the most I/O activity

GET `/storage/volumes/{volume.uuid}/top-metrics/files`

Introduced In: 9.10

Retrieves a list of files with the most I/O activity.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID

Name	Type	In	Required	Description
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
max_records_per_volume	integer	query	False	Max records per volume.
volume.name	string	query	False	Filter by volume.name
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
throughput.read	integer	query	False	Filter by throughput.read
throughput.write	integer	query	False	Filter by throughput.write
path	string	query	False	Filter by path
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.write	integer	query	False	Filter by iops.write
iops.read	integer	query	False	Filter by iops.read
svm.name	string	query	False	Filter by svm.name

Name	Type	In	Required	Description
svm.uuid	string	query	False	Filter by svm.uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
incomplete_response_reason	incomplete_response_reason	Indicates that the metric report provides incomplete data.
notice	notice	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_file]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "incomplete_response_reason": {
    "code": "111411207",
    "message": "Partial data has been returned for this metric report.
Reason: The activity tracking report for this volume is not available
because the system is busy collecting tracking data."
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume."
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "metadata": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 5,
        "write": 4
      },
      "path": "/dir_abc/dir_123/file_1",
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
```

```
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 2,
        "write": 20
      },
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "volume1",
        "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
      }
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.

Error Code	Description
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518415	Failed to get the volume activity tracking report on volume volume.name in SVM svm.name.
124518416	Internal error. Volume activity tracking report timed out for volume volume.name in SVM svm.name.
124518417	Volume wildcard queries are not supported for activity tracking reports.
124518418	The activity tracking report for volume volume.name in SVM svm.name returned zero records. Check whether the volume has read/write traffic. Refer to the REST API documentation for more information.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
124518423	Volume activity tracking is not supported on the volume.
124519411	Volume activity tracking is not enabled on the volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

incomplete_response_reason

Indicates that the metric report provides incomplete data.

Name	Type	Description
code	string	Warning code indicating why partial data was reported.
message	string	A message describing the reason for partial data.

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

_links

Name	Type	Description
metadata	href	
self	href	

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.

Name	Type	Description
write	integer	Average number of write bytes received per second.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_file

Information about a file's IO activity.

Name	Type	Description
_links	_links	
iops	iops	
path	string	Path of the file.
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve users

Storage volumes volume.uuid top-metrics users endpoint overview

Overview

You can use this API to retrieve a list of users with the most I/O activity for a specified volume, within the past several seconds. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` or `throughput` metrics. This API also supports only returning one I/O activity type per request.

Approximate accounting and error bars

When too many users have recent activity, some users might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the users that would have otherwise been included might not be present in the final list returned by the API.

Failure to return list of users with most I/O activity

The API can sometimes fail to return the list of users with the most I/O activity, due to the following reasons:

– The volume does not have the activity tracking feature enabled.

– The volume has not had any recent NFS/CIFS client traffic.

– The NFS/CIFS client operations are being served by the client-side filesystem cache.

– The NFS/CIFS client operations are being buffered by the client operating system.

– On rare occasions, the incoming traffic pattern is not suitable to obtain the list of users with the most I/O activity.

Failure to return the usernames

The API can sometimes fail to obtain the usernames for the list of userid entries, due to internal transient errors.
 In such cases, instead of the username, the API will return "{<user-id>}" for the user entry.</user-id>

Retrieve a list of the users with the most I/O activity

For a report on the users with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the top_metric parameter. If the I/O activity type is not specified, by default the API returns a list of the users with the greatest number of the average read operations per second. The current maximum number of users returned by the API for an I/O activity type is 25.

– GET /api/storage/volumes/{volume.uuid}/top-metrics/users

Examples

Retrieving a list of the users with the greatest average number of read bytes received per second:

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/users

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/users?top_metric=throughput.read"

# The Response:
{
"records": [
  {
    "volume": {
      "name": "vol1"
    },
    "throughput": {
      "read": 1495,
      "error": {
        "lower_bound": 1495,
        "upper_bound": 1502
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
    "user_name": "John",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
```

```
        }
      }
    }
  },
  {
    "volume": {
      "name": "vol1"
    },
    "throughput": {
      "read": 1022,
      "error": {
        "lower_bound": 1022,
        "upper_bound": 1025
      }
    },
    "user_id": "1988",
    "user_name": "Ryan",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
        }
      }
    }
  },
  {
    "volume": {
      "name": "vol1"
    },
    "throughput": {
      "read": 345,
      "error": {
        "lower_bound": 345,
        "upper_bound": 348
      }
    },
    "user_id": "S-1-5-21-256008430-3394229847-3930036330-1003",
    "user_name": "Julie",
    "svm": {
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
```

```
        }
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/top-metrics/users?top_metric=throughput.read"
  }
}
}
```

Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/users?top_metric=throughput.write"

# The Response:
{
"records": [
],
"num_records": 0,
"notice": {
  "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
  "code": "124518418"
},
"_links": {
  "self": {
    "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/users?top_metric=throughput.write"
  }
}
}
```

Retrieve users with the most I/O activity

GET `/storage/volumes/{volume.uuid}/top-metrics/users`

Introduced In: 9.10

Retrieves a list of users with the most I/O activity.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID
top_metric	string	query	False	I/O activity type • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
user_name	string	query	False	Filter by user_name
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.read	integer	query	False	Filter by iops.read
iops.write	integer	query	False	Filter by iops.write
user_id	string	query	False	Filter by user_id
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound

Name	Type	In	Required	Description
throughput.write	integer	query	False	Filter by throughput.write
throughput.read	integer	query	False	Filter by throughput.read
volume.name	string	query	False	Filter by volume.name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
incomplete_response_reason	incomplete_response_reason	Indicates that the metric report provides incomplete data.
notice	notice	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_user]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "incomplete_response_reason": {
    "code": "111411207",
    "message": "Partial data has been returned for this metric report.
Reason: The activity tracking report for this volume is not available
because the system is busy collecting tracking data."
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume."
  },
  "num_records": 1,
  "records": [
    {
      "iops": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 4,
        "write": 8
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "throughput": {
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
```

```
          "read": 10,
          "write": 7
        },
        "user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
        "user_name": "James",
        "volume": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "volume1",
          "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
        }
      }
    ]
  }
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.

Error Code	Description
124518415	Failed to get the volume activity tracking report on volume volume.name in SVM svm.name.
124518416	Internal error. Volume activity tracking report timed out for volume volume.name in SVM svm.name.
124518417	Volume wildcard queries are not supported for activity tracking reports.
124518418	The activity tracking report for volume volume.name in SVM svm.name returned zero records. Check whether the volume has read/write traffic. Refer to the REST API documentation for more information.
124518422	Volume activity tracking is not supported on All SAN Array clusters.
124518423	Volume activity tracking is not supported on the volume.
124519411	Volume activity tracking is not enabled on the volume.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

incomplete_response_reason

Indicates that the metric report provides incomplete data.

Name	Type	Description
code	string	Warning code indicating why partial data was reported.
message	string	A message describing the reason for partial data.

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

_links

Name	Type	Description
self	href	

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

volume

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the volume. This field cannot be specified in a PATCH method.
uuid	string	Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move. • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true

top_metrics_user

Information about a user's IO activity.

Name	Type	Description
iops	iops	
svm	svm	SVM, applies only to SVM-scoped objects.
throughput	throughput	
user_id	string	User ID of the user.
user_name	string	Name of the user.
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Support

Support overview

Overview

You can use ONTAP support APIs to manage configuration backups, autosupport settings, and event handling.

Configuration backups

Configuration backups are copies of node and cluster settings saved to an external server.
Single-node clusters must have configuration backups as protection against corruption of the configuration database. Multi-node clusters back up the configuration automatically between the nodes in the cluster.

Event Management System (EMS)

The Event Management System (EMS) collects and processes events, and sends notification of the events through various reporting mechanisms.

Examples

The following example configures EMS to send a support email when a WAFL event is observed with a severity of error, alert, or emergency.

Configuring the system-wide email parameters

```
# The API:
PATCH /support/ems

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/ems" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_config_patch.txt"
test_ems_config_patch.txt(body):
{
"mail_from": "administrator@mycompany.com",
"mail_server": "smtp@mycompany.com"
}

# The response:
200 OK
```

Configuring a filter with an enclosed rule

```
# The API:
POST /support/ems/filters

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/filters" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_filters_post.txt"
test_ems_filters_post.txt(body):
{
"name": "error-wafl",
"rules": [
  {
    "index": 1,
    "type": "include",
    "message_criteria": {
      "name_pattern": "wafl.*",
      "severities": "emergency,alert,error"
    }
  }
]
}

# The response:
201 Created
```

Setting up an email destination

```
# The API:
POST /support/ems/destinations

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/destinations" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_dest_post.txt"
test_ems_dest_post.txt(body):
{
"name": "Technician_Email",
"type": "email",
"destination": "technician@mycompany.com",
"filters": [
  { "name" : "error-wafl" }
]
}

# The response:
201 Created
```

Manage an automatic update feature

Support auto-update endpoint overview

Overview

The Automatic Update feature helps keep the ONTAP cluster current with the latest software component updates by automatically downloading and applying them to the cluster.
By enabling this feature, you agree to the following terms:

AUTOMATIC UPDATE TERMS

These Automatic Update Terms ("Terms") set forth the terms and conditions between NetApp, Inc., NetApp B.V., or any of their affiliates ("NetApp") and End User Customer ("Customer") in connection with the feature enabling Customer to receive software patches, upgrades, and updates to NetApp Software automatically ("Automatic Update"). By agreeing to and accepting Automatic Updates, Customer agrees to be bound by these Terms, as well as NetApp's End User License Agreement and Support Terms available at https://www.netapp.com/how-to-buy/sales-terms-and-conditions/.

By enabling the Automatic Update feature, Customer agrees to receive Automatic Updates that NetApp may provide from time to time, without any additional notice, and NetApp will not be liable for any damages, loss of data or loss of functionalities arising from provision of Automatic Updates. Customer may revoke acceptance of these Terms and disable the receipt of Automatic Updates by setting the feature configuration to "Disabled" in ONTAP.

Timely installation of updates to security features is required for such features to function properly, including

ransomware detection.

Important note:
When the automatic update feature is disabled

- No new updates are shown to the user
- All automatic updates currently scheduled will have their schedules cancelled.
- All automatic updates currently waiting for user confirmation cannot be started until the feature is re-enabled.

Examples

Retrieving the current status of the automatic update feature

The following example shows how to retrieve the current status of the automatic update feature:

```
# The API:
GET /support/auto-update

# The call:
curl -X GET "https://<mgmt-ip>/api/support/auto-update"

# The response:
{
"enabled": true,
"eula": {
  "accepted": true,
  "accepted_timestamp": "2020-12-01T21:24:44-04:00",
  "user_id_accepted": "admin",
  "accepted_ip_address": "192.168.1.125"
},
"_links": {
  "self": {
    "href": "/api/support/auto-update"
  }
}
}
```

Updating the status of the automatic update feature

The following example shows how to update the status of the automatic update feature:

```
# The API:
PATCH /support/auto-update

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/auto-update" -H "accept:
application/hal+json" -d '{ "enabled" : "true" }'

# The response:
200 OK
```

Retrieve the current status of an automatic update feature

GET `/support/auto-update`

Introduced In: 9.10

Retrieves the current status of the automatic update feature and the End User License Agreement (EULA).

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
enabled	boolean	Flag indicating feature state.
eula	eula	

Example response

```
{
  "_links": {
    "self": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "enabled": 1,
  "eula": {
    "accepted": 1,
    "accepted_ip_address": "192.168.1.125",
    "accepted_timestamp": "2020-12-01 08:12:23 -0500",
    "user_id_accepted": "admin"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self

Name	Type	Description
self	href	

_links

Name	Type	Description
self	self	

eula

Name	Type	Description
accepted	boolean	Flag indicating the End User License Agreement (EULA) acceptance. When the feature is enabled, it is assumed that the EULA is accepted.
accepted_ip_address	string	IP Address from where the EULA was accepted.
accepted_timestamp	string	Date and time when the EULA was accepted.
user_id_accepted	string	User ID that provided the EULA acceptance.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the current enabled status of an automatic update feature

PATCH `/support/auto-update`

Introduced In: 9.10

Updates the current enabled status of the automatic update feature and accepts the EULA.

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	Set the force flag to true to enable the automatic update feature regardless of how AutoSupport is configured. Without this flag set to true, an attempt to enable the automatic update feature fails unless AutoSupport is enabled, its transport is HTTPS, and the AutoSupport OnDemand feature is enabled. • Introduced in: 9.16 • Default value:

Request Body

Name	Type	Description
_links	_links	

Name	Type	Description
enabled	boolean	Flag indicating feature state.
eula	eula	

Example request

```
{
  "enabled": 1,
  "eula": {
    "accepted": 1,
    "accepted_ip_address": "192.168.1.125",
    "accepted_timestamp": "2020-12-01 08:12:23 -0500",
    "user_id_accepted": "admin"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262179	Unexpected argument.
131072216	Automatic update requires AutoSupport to be enabled.
131072217	Automatic update requires AutoSupport OnDemand to be enabled.
131072218	Automatic update requires AutoSupport to use the HTTPS transport.
131072219	The provided parameter requires an effective cluster version of ONTAP 9.16.1 or later.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self

_links

eula

Name	Type	Description
accepted	boolean	Flag indicating the End User License Agreement (EULA) acceptance. When the feature is enabled, it is assumed that the EULA is accepted.
accepted_ip_address	string	IP Address from where the EULA was accepted.
accepted_timestamp	string	Date and time when the EULA was accepted.
user_id_accepted	string	User ID that provided the EULA acceptance.

auto_update_info

Name	Type	Description
_links	_links	
enabled	boolean	Flag indicating feature state.
eula	eula	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve automatic update configuration

Support auto-update configurations endpoint overview

Overview

Use this API to query and retrieve all the configurations for automatic updates.

This API only supports GET calls.

Examples

Retrieving the configuration settings for automatic updates

The following example shows how to retrieve settings for all automatic updates:

```
# The API:
GET /support/auto-update/configurations/

# The call:
curl -X GET "https://<mgmt-ip>/api/support/auto-
update/configurations?fields=*"

# The response:
{
"records": [
  {
    "uuid": "440ae2e4-fd8f-4225-9bee-94e2da3f8d9d",
    "category": "firmware",
    "description": {
      "message": "SP/BMC Firmware",
      "code": "131072402"
    },
    "action": "confirm",
  }
],
"num_records": 1
}
```

Retrieve the configuration for an automatic update

GET `/support/auto-update/configurations`

Introduced In: 9.10

Retrieves the configuration for automatic updates.

Parameters

Name	Type	In	Required	Description
action	string	query	False	Filter by action
uuid	string	query	False	Filter by uuid
description.code	string	query	False	Filter by description.code
description.message	string	query	False	Filter by description.message
category	string	query	False	Filter by category

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[auto_update_configuration]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "action": "confirm",
      "category": "disk_fw",
      "description": {
        "code": "string",
        "message": "string"
      },
      "uuid": "572361f3-e769-439d-9c04-2ba48a08ff47"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

description

Description of the configuration row.
ONTAP Message Codes

Code	Description
131072401	Storage Firmware
131072402	SP/BMC Firmware
131072403	System Files

Name	Type	Description
code	string	Argument code
message	string	Message argument

auto_update_configuration

Name	Type	Description
_links	_links	
action	string	The action to be taken by the alert source as specified by the user.
category	string	Category for the configuration row.

Name	Type	Description
description	description	Description of the configuration row. ONTAP Message Codes Code — Description 131072401 — Storage Firmware 131072402 — SP/BMC Firmware 131072403 — System Files
uuid	string	Unique identifier for the configuration row.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage automatic update configuration

Support auto-update configurations UUID endpoint overview

Overview

Use this API to query and retrieve a specific automatic package update configuration.

This API supports GET and PATCH calls. PATCH enables the `action` field to be updated for the specified configuration.

Examples

Retrieving settings for a specific automatic update

The following example shows how to retrieve configuration settings for an automatic update category:

```
# The API:
/support/auto-update/configurations/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/auto-
update/configurations/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d"

# The response:
{
"uuid": "440ae2e4-fd8f-4225-9bee-94e2da3f8d9d",
"category": "firmware",
"description": {
  "message": "SP/BMC Firmware",
  "code": "131072402"
},
"action": "confirm",
}
```

Updating the settings for a specific automatic update

The following example shows how to modify configuration settings for an automatic update:

```
# The API:
/support/auto-update/configurations/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/auto-
update/configurations/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d" -H "accept:
application/hal+json" -d '{"action":"confirm"}'

# The response:
200 OK
```

Retrieve a specific configuration for an automatic update

GET `/support/auto-update/configurations/{uuid}`

Introduced In: 9.10

Retrieves the configuration for a specified automatic update.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier for configuration record.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
action	string	The action to be taken by the alert source as specified by the user.
category	string	Category for the configuration row.
description	description	Description of the configuration row. ONTAP Message Codes Code — Description 131072401 — Storage Firmware 131072402 — SP/BMC Firmware 131072403 — System Files
uuid	string	Unique identifier for the configuration row.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "confirm",
  "category": "disk_fw",
  "description": {
    "code": "string",
    "message": "string"
  },
  "uuid": "572361f3-e769-439d-9c04-2ba48a08ff47"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

description

Description of the configuration row.
ONTAP Message Codes

Code	Description
131072401	Storage Firmware
131072402	SP/BMC Firmware
131072403	System Files

Name	Type	Description
code	string	Argument code
message	string	Message argument

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Modify the configuration for an automatic update

PATCH `/support/auto-update/configurations/{uuid}`

Introduced In: 9.10

Updates the configuration for a specified automatic update.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier for configuration record.

Request Body

Name	Type	Description
action	string	The action to be taken by the alert source as specified by the user.
category	string	Category for the configuration row.
uuid	string	Unique identifier for the configuration row.

Example request

```
{
  "action": "confirm",
  "category": "disk_fw",
  "uuid": "572361f3-e769-439d-9c04-2ba48a08ff47"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262179	Unexpected argument.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

description

Description of the configuration row.
ONTAP Message Codes

Code	Description
131072401	Storage Firmware
131072402	SP/BMC Firmware
131072403	System Files

Name	Type	Description
code	string	Argument code
message	string	Message argument

auto_update_configuration

Name	Type	Description
action	string	The action to be taken by the alert source as specified by the user.
category	string	Category for the configuration row.
uuid	string	Unique identifier for the configuration row.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve status for all automatic updates

Support auto-update updates endpoint overview

Overview

Use this API to retrieve the status for all the automatic package updates.

This API only supports GET calls.

Examples

Retrieving the status of all package updates

The following example shows how to retrieve the status of all automatic updates:

```
# The API:
GET /support/auto-update/updates/

# The call:
curl -X GET "https://<mgmt-ip>/api/support/auto-update/updates?fields=*"

# The response:
{
"records": [
  {
    "uuid" : "440ae2e4-fd8f-4225-9bee-94e2da3f8d9d",
    "package_id" : "572361f3-e769-439d-9c04-2ba48a08ff47",
    "content_type" : "disk_fw",
    "content_category" : "firmware",
    "description" : "disk_fw version 3.0",
    "state" : "downloading",
    "creation_time" : "2020-12-01T09:12:03Z",
```

```
    "expiry_time" : "2021-06-01T09:12:03Z",
    "last_state_change_time" : "2020-12-01T09:12:23Z",
    "start_time": "2020-12-01T09:12:23Z",
    "percent_complete": 25,
    "remaining_time": "PT1M30S",
    "_links": {
      "self": {
        "href": "/support/auto-update/updates/440ae2e4-fd8f-4225-9bee-
94e2da3f8d9d"
      }
    }
  },
  {
    "uuid" : "440ae2e4-fd8f-4225-9bee-94e2da3f9d8d",
    "package_id" : "e2e12753-8501-11e8-a7c1-00505695c997",
    "content_type" : "disk_fw",
    "content_category" : "firmware",
    "description" : "disk_fw version 3.1",
    "state" : "pending_confirmation",
    "creation_time" : "2020-12-01T09:12:03Z",
    "expiry_time" : "2021-06-01T09:12:03Z",
    "last_state_change_time" : "2020-12-01T09:12:23Z",
    "start_time": "2020-12-01T09:12:23Z",
    "_links": {
      "self": {
        "href": "/support/auto-update/updates/440ae2e4-fd8f-4225-9bee-
94e2da3f8d9d"
      }
    }
  },
  {
    "uuid" : "440ae2e4-fd8f-4225-9aeb-94e2da3f8ef9",
    "package_id" : "e2e12753-8501-11e8-a7c1-00505695c997",
    "content_type" : "shelf_fw",
    "content_category" : "Firmware",
    "description" : "shelf_fw version 4.0",
    "state" : "applying",
    "creation_time" : "2020-12-01T09:11:53Z",
    "expiry_time" : "2021-06-01T09:12:03Z",
    "last_state_change_time" : "2020-12-01T09:12:13Z",
    "start_time": "2020-12-01T09:12:23Z",
    "percent_complete": 85,
    "remaining_time": "PT30S",
    "_links": {
      "self": {
        "href": "/support/auto-update/updates/440ae2e4-fd8f-4225-9aeb-
```

```
94e2da3f8ef9"
        }
      }
    }
  ],
  "num_records": 3,
  "_links": {
    "self": {
      "href": "/api/support/auto-update/updates?fields=*"
    }
  }
}
```


Retrieve status of all automatic updates

GET `/support/auto-update/updates`

Introduced In: 9.10

Retrieves the status of all updates.

Parameters

Name	Type	In	Required	Description
scheduled_time	string	query	False	Filter by scheduled_time
percent_complete	integer	query	False	Filter by percent_complete
last_state_change_time	string	query	False	Filter by last_state_change_time
creation_time	string	query	False	Filter by creation_time
start_time	string	query	False	Filter by start_time
state	string	query	False	Filter by state
content_category	string	query	False	Filter by content_category
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
description	string	query	False	Filter by description
status.code	string	query	False	Filter by status.code
status.message	string	query	False	Filter by status.message
status.arguments.code	string	query	False	Filter by status.arguments.code
status.arguments.message	string	query	False	Filter by status.arguments.message
remaining_time	string	query	False	Filter by remaining_time
expiry_time	string	query	False	Filter by expiry_time
end_time	string	query	False	Filter by end_time
package_id	string	query	False	Filter by package_id
content_type	string	query	False	Filter by content_type
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[auto_update_status]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "action": "schedule_now",
      "content_category": "Firmware",
      "content_type": "disk_fw",
      "creation_time": "2020-12-01 04:12:23 -0500",
      "description": "disk_fw version 3.0",
      "end_time": "2020-12-01 04:12:23 -0500",
      "expiry_time": "2021-06-01 05:12:23 -0400",
      "last_state_change_time": "2020-12-01 04:12:23 -0500",
      "package_id": "572361f3-e769-439d-9c04-2ba48a08ff47",
      "percent_complete": 85,
      "remaining_time": "PT1H45M13S",
      "schedule_time": "2020-12-20 16:00:00 -0500",
      "scheduled_time": "2020-12-05 04:12:23 -0500",
      "start_time": "2020-12-01 04:12:23 -0500",
      "state": "pending_confirmation",
      "status": {
        "arguments": [
          {
            "code": "string",
            "message": "string"
          }
        ],
        "code": "4",
        "message": "entry doesn't exist"
      },
```

```
      "uuid": "440ae2e4-fd8f-4225-9bee-94e2da3f9d8d"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self

Name	Type	Description
self	href	

_links

Name	Type	Description
self	self	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

status

Status of the update.
ONTAP Message Codes

Code	Description
8650878	Get-url request to AutoSupport OnDemand Server failed.
131072105	Package installation successful.
131072106	Package installation failed.
131072107	Package installation is in progress.
131072108	An internal error occurred.
131072109	No errors found.

Code	Description
131072110	Failed to extract package.
131072111	Failed to create entry in status table.
131072209	Failed to download package.
131072210	Failed to obtain download links. Will be retried.
131072211	Installation cannot start because the following nodes are not up. Will be retried.
131072212	Automatic update cannot start. Will be retried.
131072213	Installation complete.
131072214	Installation in progress.
131072215	Scheduled to start.
131072301	Unable to create directory.
131072302	Update not required. It is already on the target firmware version.
131072303	Unable to move installable to installation location.
131072304	Successfully updated. All nodes already updated and skipped.
131072306	Firmware distribution starting.
131072307	Firmware distribution restarting.
131072308	Firmware distribution failed.
131072309	Firmware installation successful on node.
131072310	Firmware installable is corrupt on node.
131072311	Could not apply firmware update on nodes.
131072312	Firmware update operation failed.
131072313	Install failed to initiate on node.
131072314	Install initiated on node.
131072315	Install failed on node.
131072316	Update in progress on node.
131072317	Unexpected state occurred during firmware installation on node.
131072318	Successfully updated SP/BMC firmware.
131072319	Backup SP image is running. Firmware installation failed prematurely on node.
131072320	SP rebooted with an unexpected firmware version on node.
131072321	Waiting for shelf firmware to update.

Code	Description
131072322	Update complete.
131072323	Shelf update timed out.
131072324	Successfully updated shelves on nodes.
131072325	Waiting for disk firmware to update.
131072326	Disk update completed.
131072327	Disk update timed out.
131072328	Successfully updated disks on nodes.
131072329	Waiting for DQP firmware to update.
131072330	Successfully updated DQP on nodes.
131072331	DQP update timed out.
131072332	Failed to copy firmware.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

auto_update_status

Name	Type	Description
_links	_links	
action	string	Action to be applied to the automatic update.
content_category	string	Category of the update
content_type	string	Image or package type.
creation_time	string	The date and time at which the update request was received.
description	string	Description of the update.
end_time	string	The date and time at which the update request processing ended.

Name	Type	Description
expiry_time	string	The date and time at which the update request will expire.
last_state_change_time	string	The date and time at which the state of the update changed last.
package_id	string	Unique identifier provided by the back-end.
percent_complete	integer	Percentage of update completed
remaining_time	string	The time remaining for the update processing to complete in an ISO-8601 duration formatted string.
schedule_time	string	Date and time when an automatic update action is scheduled. This field is required when the action field is set to "schedule".
scheduled_time	string	The date and time at which the update request is currently scheduled for.
start_time	string	The date and time at which the update request processing started.
state	string	Current state of the update.

Name	Type	Description
status	status	Status of the update. ONTAP Message Codes Code — Description 8650878 — Get-url request to AutoSupport OnDemand Server failed. 131072105 — Package installation successful. 131072106 — Package installation failed. 131072107 — Package installation is in progress. 131072108 — An internal error occurred. 131072109 — No errors found. 131072110 — Failed to extract package. 131072111 — Failed to create entry in status table. 131072209 — Failed to download package. 131072210 — Failed to obtain download links. Will be retried. 131072211 — Installation cannot start because the following nodes are not up. Will be retried. 131072212 — Automatic update cannot start. Will be retried. 131072213 — Installation complete. 131072214 — Installation in progress. 131072215 — Scheduled to start. 131072301 — Unable to create directory. 131072302 — Update not required. It is already on the target firmware version.

Name	Type	Description
uuid	string	Unique identifier for this update.

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage automatic updates

Support auto-update updates UUID endpoint overview

Overview

Use this API to retrieve the status for a specific automatic package update.

This API supports GET and PATCH calls. PATCH can be used to perform an action on an automatic update.

Examples

Retrieving the status of an update

The following example shows how to retrieve the status of an automatic update:

131072304 — Successfully updated. All nodes already

131072310 — Firmware installable is corrupt on node.

131072311 — Could not apply firmware update on nodes.

131072312 — Firmware update operation failed.

131072313 — Install failed to initiate on node.

131072314 — Install initiated on node.

131072315 — Install failed on node.

131072316 — Update in progress on node.

131072317 — Unexpected state occurred during firmware installation on node.

131072318 — Successfully updated SP/BMC firmware.

131072319 — Backup SP image is running. Firmware installation failed prematurely on node.

131072320 — SP rebooted with an unexpected firmware version on node.

131072321 — Waiting for shelf firmware to update.

```
# The API:
GET /support/auto-update/updates/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d

# The call:
curl -X GET "https://<mgmt-ip>/api/support/auto-update/updates/440ae2e4-
fd8f-4225-9bee-94e2da3f8d9d"

# The response:
{
"uuid" : "440ae2e4-fd8f-4225-9bee-94e2da3f8d9d",
"package_id" : "572361f3-e769-439d-9c04-2ba48a08ff47",
"content_type" : "disk_fw",
"content_category" : "Firmware",
"description" : "disk_fw version 3.0",
"state" : "downloading",
"creation_time" : "2020-12-01T09:12:03Z",
"expiry_time" : "2021-06-01T09:12:03Z",
"last_state_change_time" : "2020-12-01T09:12:23Z",
"start_time" : "2020-12-01T09:12:23Z",
"percent_complete": 25,
"remaining_time": "PT1M30S",
"status": {
    "message": "Get-url request to AutoSupport OnDemand Server failed.
Error: Couldn't connect to server.",
    "code": "8650878"
},
"_links": {
  "self": {
    "href": "/support/auto-update/updates/440ae2e4-fd8f-4225-9bee-
94e2da3f8d9d"
  }
}
}
```

Updating the state of an automatic update

The following example shows how to trigger an automatic update that is waiting for user confirmation:

```
# The API:
PATCH /support/auto-update/updates/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/auto-update/updates/440ae2e4-
fd8f-4225-9bee-94e2da3f8d9d?action=schedule_now" -H "accept:
application/hal+json"

# The response:
200 OK
```

The following example shows how to dismiss an automatic update that is waiting for user confirmation:

```
# The API:
PATCH /support/auto-update/updates/440ae2e4-fd8f-4225-9bee-94e2da3f8d9d

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/auto-update/updates/440ae2e4-
fd8f-4225-9bee-94e2da3f8d9d?action=dismiss" -H "accept:
application/hal+json"

# Response
200 OK
```

Retrieve the status of an update

GET `/support/auto-update/updates/{uuid}`

Introduced In: 9.10

Retrieves the status of an update.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Update identifier
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
action	string	Action to be applied to the automatic update.
content_category	string	Category of the update
content_type	string	Image or package type.
creation_time	string	The date and time at which the update request was received.
description	string	Description of the update.
end_time	string	The date and time at which the update request processing ended.
expiry_time	string	The date and time at which the update request will expire.
last_state_change_time	string	The date and time at which the state of the update changed last.
package_id	string	Unique identifier provided by the back-end.
percent_complete	integer	Percentage of update completed
remaining_time	string	The time remaining for the update processing to complete in an ISO-8601 duration formatted string.
schedule_time	string	Date and time when an automatic update action is scheduled. This field is required when the action field is set to "schedule".
scheduled_time	string	The date and time at which the update request is currently scheduled for.
start_time	string	The date and time at which the update request processing started.
state	string	Current state of the update.

Name	Type	Description
status	status	Status of the update. ONTAP Message Codes Code — Description 8650878 — Get-url request to AutoSupport OnDemand Server failed. 131072105 — Package installation successful. 131072106 — Package installation failed. 131072107 — Package installation is in progress. 131072108 — An internal error occurred. 131072109 — No errors found. 131072110 — Failed to extract package. 131072111 — Failed to create entry in status table. 131072209 — Failed to download package. 131072210 — Failed to obtain download links. Will be retried. 131072211 — Installation cannot start because the following nodes are not up. Will be retried. 131072212 — Automatic update cannot start. Will be retried. 131072213 — Installation complete. 131072214 — Installation in progress. 131072215 — Scheduled to start. 131072301 — Unable to create directory. 131072302 — Update not required. It is already on the target firmware version.
		131072303 — Unable to move

Name	Type	Description
uuid	string	Unique identifier for this update.

131072304 — Successfully updated. All nodes already updated and skipped.

Example response


```
{
  "_links": {
    "self": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "action": "schedule_now",
  "content_category": "Firmware",
  "content_type": "disk_fw",
  "creation_time": "2020-12-01 04:12:23 -0500",
  "description": "disk_fw version 3.0",
  "end_time": "2020-12-01 04:12:23 -0500",
  "expiry_time": "2021-06-01 05:12:23 -0400",
  "last_state_change_time": "2020-12-01 04:12:23 -0500",
  "package_id": "572361f3-e769-439d-9c04-2ba48a08ff47",
  "percent_complete": 85,
  "remaining_time": "PT1H45M13S",
  "schedule_time": "2020-12-20 16:00:00 -0500",
  "scheduled_time": "2020-12-05 04:12:23 -0500",
  "start_time": "2020-12-01 04:12:23 -0500",
  "state": "pending_confirmation",
  "status": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "uuid": "440ae2e4-fd8f-4225-9bee-94e2da3f9d8d"
}
```


131072320 — SP rebooted with an unexpected firmware version on node.

131072321 — Waiting for shelf firmware to update.

131072322 — Update complete.

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self

Name	Type	Description
self	href	

_links

Name	Type	Description
self	self	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

status

Status of the update.
ONTAP Message Codes

Code	Description
8650878	Get-url request to AutoSupport OnDemand Server failed.
131072105	Package installation successful.
131072106	Package installation failed.
131072107	Package installation is in progress.
131072108	An internal error occurred.
131072109	No errors found.
131072110	Failed to extract package.
131072111	Failed to create entry in status table.
131072209	Failed to download package.
131072210	Failed to obtain download links. Will be retried.

Code	Description
131072211	Installation cannot start because the following nodes are not up. Will be retried.
131072212	Automatic update cannot start. Will be retried.
131072213	Installation complete.
131072214	Installation in progress.
131072215	Scheduled to start.
131072301	Unable to create directory.
131072302	Update not required. It is already on the target firmware version.
131072303	Unable to move installable to installation location.
131072304	Successfully updated. All nodes already updated and skipped.
131072306	Firmware distribution starting.
131072307	Firmware distribution restarting.
131072308	Firmware distribution failed.
131072309	Firmware installation successful on node.
131072310	Firmware installable is corrupt on node.
131072311	Could not apply firmware update on nodes.
131072312	Firmware update operation failed.
131072313	Install failed to initiate on node.
131072314	Install initiated on node.
131072315	Install failed on node.
131072316	Update in progress on node.
131072317	Unexpected state occurred during firmware installation on node.
131072318	Successfully updated SP/BMC firmware.
131072319	Backup SP image is running. Firmware installation failed prematurely on node.
131072320	SP rebooted with an unexpected firmware version on node.
131072321	Waiting for shelf firmware to update.
131072322	Update complete.
131072323	Shelf update timed out.
131072324	Successfully updated shelves on nodes.
131072325	Waiting for disk firmware to update.

Code	Description
131072326	Disk update completed.
131072327	Disk update timed out.
131072328	Successfully updated disks on nodes.
131072329	Waiting for DQP firmware to update.
131072330	Successfully updated DQP on nodes.
131072331	DQP update timed out.
131072332	Failed to copy firmware.

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Perform an action on the update

PATCH `/support/auto-update/updates/{uuid}`

Introduced In: 9.10

Perform an action on the update.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Update identifier

Name	Type	In	Required	Description
action	string	query	True	Action to be performed on the update • enum: ["cancel_schedule", "dismiss", "schedule", "schedule_now", "abort", "undismiss"]
schedule_time	string	query	False	Date and Time for which update is to be scheduled. This parameter is required only when action is "schedule". It should be in the ISO-8601 Date and Time format. Example- "2020-12-05T09:12:23Z". • format: date-time

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
262248	Unexpected parameter missing a delimiter.
131072200	Invalid Automatic Update ID.
131072201	No schedule to cancel for automatic update ID.
131072202	Cannot abort an automatic update that is not in progress.
131072203	Cannot dismiss a non-pending automatic update.

Error Code	Description
131072204	Cannot reactivate an automatic update that has not been dismissed.
131072205	Cannot schedule a non-pending automatic update to start.
131072206	Cannot schedule an automatic update past its expiration date.
131072207	Cannot schedule an automatic update in the past.
131072208	Cannot schedule automatic update while the feature is disabled.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage AutoSupport configuration

Support AutoSupport endpoint overview

Overview

AutoSupport is the NetApp *call home* mechanism. AutoSupport sends configuration details, status details, and error reporting details to NetApp.

This endpoint supports both GET and PATCH calls. GET is used to retrieve AutoSupport configuration details for the cluster and PATCH is used to modify the AutoSupport configuration of the cluster. You can also use GET calls to check AutoSupport connectivity.

Examples

Configuring 'to' addresses

The following example configures AutoSupport to send emails to 'to' addresses.

```
# The API:
PATCH /support/autosupport

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/autosupport" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"to\": [
\"abc@netapp.com\", \"xyz@netapp.com\" ]}"

# The response:
200 OK
{}
```

Configuring 'SMTP' transport

The following example configures AutoSupport to use 'SMTP' transport. The default transport is 'HTTPS'.

```
# The API:
PATCH /support/autosupport

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/autosupport" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"transport\": \"smtp\"}"

# The response:
200 OK
{}
```

Configuring 'start_tls' SMTP encryption

The following example configures AutoSupport to use 'start_tls' SMTP encryption. The default value for the smtp_encryption field is 'none'.

```
# The API:
PATCH /support/autosupport

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/autosupport" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"smtp_encryption\": \"start_tls\"}"

# The response:
200 OK
{}
```

Retrieving the AutoSupport configuration

The following example retrieves AutoSupport configuration for the cluster.

```
# The API:
GET /support/autosupport

# The call:
curl -X GET "https://<mgmt-ip>/api/support/autosupport" -H "accept:
application/hal+json"

# The response:
200 OK
{
"enabled": true,
"mail_hosts": [
  "mailhost"
],
"from": "Postmaster",
"to": [
  "abc@netapp.com",
  "xyz@netapp.com"
],
"contact_support": true,
"transport": "smtp",
"proxy_url": "",
"is_minimal": false,
"smtp_encryption": "none",
"ondemand_enabled": true,
"_links": {
  "self": {
    "href": "/api/support/autosupport"
  }
}
}
```

Retrieving AutoSupport connectivity issues

The following example retrieves AutoSupport connectivity issues for the cluster. The `fields=issues` parameter must be specified, for the response to return connectivity issues. The `corrective_action` section might contain commands which needs to be executed on the ONTAP CLI.

Note that the connectivity check can take up to 10 seconds to complete.

```
# The API:
GET /support/autosupport

# The call:
```

```
curl -X GET "https://<mgmt-ip>/api/support/autosupport?fields=issues" -H
"accept: application/hal+json"

# The response:
200 OK
{
"issues": [
  {
    "destination": "mailhost",
    "component": "mail_server",
    "node": {
      "name": "node3",
      "uuid": "0ecfd0a6-f1b3-11e8-9d9f-005056bbaadc",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0ecfd0a6-f1b3-11e8-9d9f-
005056bbaadc"
        }
      }
    },
    "issue": {
      "message": "SMTP connectivity check failed for destination:
mailhost. Error: Could not resolve host - 'mailhost'",
      "code": "53149746"
    },
    "corrective_action": {
      "message": "Check the hostname of the SMTP server",
      "code": "53149746"
    }
  },
  {
    "destination": "https://support.netapp.com/aods/asupmessage",
    "component": "ondemand_server",
    "node": {
      "name": "node3",
      "uuid": "0ecfd0a6-f1b3-11e8-9d9f-005056bbaadc",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0ecfd0a6-f1b3-11e8-9d9f-
005056bbaadc"
        }
      }
    },
    "issue": {
      "message": "AutoSupport OnDemand is disabled when \"-transport\" is
not set to \"https\".",
```

```
      "code": "53149740"
    },
    "corrective_action": {
      "message": "Run \"system node autosupport modify -transport https
-node <node name>\" to set \"-transport\" to \"https\".",
      "code": "53149740"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/support/autosupport"
  }
}
}
```


Retrieving AutoSupport configuration and connectivity issues

The following example retrieves AutoSupport configuration and connectivity issues on the cluster. Use `fields=*,issues` parameter to return both configuration and connectivity issues.

```
# The API:
GET /support/autosupport

# The call:
curl -X GET "https://<mgmt-ip>/api/support/autosupport?fields=*%2Cissues"
-H "accept: application/hal+json"

# The response:
200 OK
{
"enabled": true,
"mail_hosts": [
  "mailhost"
],
"from": "Postmaster",
"to": [
  "abc@netapp.com",
  "xyz@netapp.com"
],
"contact_support": true,
"transport": "smtp",
"proxy_url": "",
"is_minimal": false,
```

```
"issues": [
  {
    "destination": "mailhost",
    "component": "mail_server",
    "node": {
      "name": "node3",
      "uuid": "0ecfd0a6-f1b3-11e8-9d9f-005056bbaadc",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0ecfd0a6-f1b3-11e8-9d9f-
005056bbaadc"
        }
      }
    },
    "issue": {
      "message": "SMTP connectivity check failed for destination:
mailhost. Error: Could not resolve host - 'mailhost'",
      "code": "53149746"
    },
    "corrective_action": {
      "message": "Check the hostname of the SMTP server",
      "code": "53149746"
    }
  },
  {
    "destination": "https://support.netapp.com/aods/asupmessage",
    "component": "ondemand_server",
    "node": {
      "name": "node3",
      "uuid": "0ecfd0a6-f1b3-11e8-9d9f-005056bbaadc",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/0ecfd0a6-f1b3-11e8-9d9f-
005056bbaadc"
        }
      }
    },
    "issue": {
      "message": "AutoSupport OnDemand is disabled when \"-transport\" is
not set to \"https\".",
      "code": "53149740"
    },
    "corrective_action": {
      "message": "Run \"system node autosupport modify -transport https
-node <node name>\" to set \"-transport\" to \"https\".",
      "code": "53149740"
```

```
      }
    }
  ],
  "smtp_encryption": "none",
  "ondemand_enabled": true,
  "_links": {
    "self": {
      "href": "/api/support/autosupport"
    }
  }
}
```

Retrieve the AutoSupport configuration

GET `/support/autosupport`

Introduced In: 9.6

Retrieves the AutoSupport configuration of the cluster and if requested, returns connectivity issues with the AutoSupport configuration.

Important note:

- The **issues** field consists of a list of objects containing details of the node that has a connectivity issue, the issue description, and corrective action you can take to address the issue. When not empty, this indicates a connection issue to the **HTTPS**, **SMTP**, or **AutoSupport On Demand** server.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See Requesting specific fields to learn more.

- `issues`

Related ONTAP commands

- `system node autosupport show -instance`
- `system node autosupport check show-details`

Learn more

- DOC /support/autosupport

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
contact_support	boolean	Specifies whether to send the AutoSupport messages to vendor support.
enabled	boolean	Specifies whether the AutoSupport daemon is enabled. When this setting is disabled, delivery of all AutoSupport messages is turned off.
from	string	The e-mail address from which the AutoSupport messages are sent. To generate node-specific 'from' addresses, enable '-node-specific-from' parameter via ONTAP CLI. • example: postmaster@example.com • format: email • Introduced in: 9.6 • x-nullable: true
is_minimal	boolean	Specifies whether the system information is collected in compliant form, to remove private data or in complete form, to enhance diagnostics.
issues	array[autosupport_issues]	A list of connectivity issues to the HTTPS/SMTP/AOD AutoSupport destinations on the nodes in the cluster along with the corrective actions.

Name	Type	Description
mail_hosts	array[string]	The names of the mail servers used to deliver AutoSupport messages via SMTP.
ondemand_enabled	boolean	Specifies whether the AutoSupport OnDemand feature is enabled. When AutoSupport OnDemand is enabled, support personnel can remotely trigger new AutoSupport messages, resend existing AutoSupport messages, and decline the delivery of unwanted AutoSupport messages. When this option is disabled, the cluster does not respond to any AutoSupport OnDemand requests from support personnel.
partner_addresses	array[string]	The list of partner addresses.
proxy_url	string	Proxy server for AutoSupport message delivery via HTTPS. Optionally specify a username/password for authentication with the proxy server.
smtp_encryption	string	The encryption protocol used to deliver AutoSupport messages via SMTP to the configured mail_hosts.
to	array[string]	The e-mail addresses to which the AutoSupport messages are sent.
transport	string	The name of the transport protocol used to deliver AutoSupport messages. 'http' transport is no longer supported by AutoSupport servers.

Example response


```
{
  "contact_support": 1,
  "enabled": 1,
  "from": "<a href="
mailto:postmaster@example.com">postmaster@example.com</a>",
  "is_minimal": 1,
  "issues": [
    {
      "component": "mail_server",
      "corrective_action": {
        "code": "53149746",
        "message": "Check the hostname of the SMTP server"
      },
      "destination": "mailhost1.example.com",
      "issue": {
        "code": "53149746",
        "message": "SMTP connectivity check failed for destination:
mailhost. Error: Could not resolve host - 'mailhost'"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "mail_hosts": [
    "mailhost1.example.com",
    "mailhost2.example.com"
  ],
  "ondemand_enabled": 1,
  "partner_addresses": [
    "<a href="mailto:user1@partner.com">user1@partner.com</a>",
    "<a href="mailto:user2@partner.com">user2@partner.com</a>"
  ],
  "proxy_url": "proxy.company.com",
  "smtp_encryption": "none",
  "to": [
    "<a href="mailto:user1@example.com">user1@example.com</a>",
    "<a href="mailto:user2@example.com">user2@example.com</a>"
```

```
  ],
  "transport": "smtp"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

autosupport_connectivity_corrective_action

Name	Type	Description
code	string	Corrective action code
message	string	Corrective action message. The corrective action might contain commands which needs to be executed on the ONTAP CLI. • example: Check the hostname of the SMTP server • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

autosupport_connectivity_issue

Name	Type	Description
code	string	Error code
message	string	Error message

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

autosupport_issues

Name	Type	Description
component	string	The name of the component where the issue occurred.
corrective_action	autosupport_connectivity_corrective_action	
destination	string	The HTTPS/SMTP/AOD AutoSupport Destination.
issue	autosupport_connectivity_issue	
node	node	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the AutoSupport configuration for an entire cluster

PATCH `/support/autosupport`

Introduced In: 9.6

Updates the AutoSupport configuration for the entire cluster.

Related ONTAP commands

- `system node autosupport modify`

Learn more

- DOC /support/autosupport

Parameters

Name	Type	In	Required	Description
force	boolean	query	False	Set the force flag to true to modify some of the AutoSupport configurations that are otherwise blocked when the automatic update feature is enabled. Without this flag set to true, an attempt to disable AutoSupport, modify the transport to SMTP, or disable the AutoSupport OnDemand feature fails if the automatic update feature is enabled. • Introduced in: 9.16 • Default value:

Request Body

Name	Type	Description
contact_support	boolean	Specifies whether to send the AutoSupport messages to vendor support.
enabled	boolean	Specifies whether the AutoSupport daemon is enabled. When this setting is disabled, delivery of all AutoSupport messages is turned off.

Name	Type	Description
from	string	The e-mail address from which the AutoSupport messages are sent. To generate node-specific 'from' addresses, enable '-node-specific-from' parameter via ONTAP CLI. • example: postmaster@example.com • format: email • Introduced in: 9.6 • x-nullable: true
is_minimal	boolean	Specifies whether the system information is collected in compliant form, to remove private data or in complete form, to enhance diagnostics.
issues	array[autosupport_issues]	A list of connectivity issues to the HTTPS/SMTP/AOD AutoSupport destinations on the nodes in the cluster along with the corrective actions.
mail_hosts	array[string]	The names of the mail servers used to deliver AutoSupport messages via SMTP.
ondemand_enabled	boolean	Specifies whether the AutoSupport OnDemand feature is enabled. When AutoSupport OnDemand is enabled, support personnel can remotely trigger new AutoSupport messages, resend existing AutoSupport messages, and decline the delivery of unwanted AutoSupport messages. When this option is disabled, the cluster does not respond to any AutoSupport OnDemand requests from support personnel.
partner_addresses	array[string]	The list of partner addresses.

Name	Type	Description
proxy_url	string	Proxy server for AutoSupport message delivery via HTTPS. Optionally specify a username/password for authentication with the proxy server.
smtp_encryption	string	The encryption protocol used to deliver AutoSupport messages via SMTP to the configured mail_hosts.
to	array[string]	The e-mail addresses to which the AutoSupport messages are sent.
transport	string	The name of the transport protocol used to deliver AutoSupport messages. 'http' transport is no longer supported by AutoSupport servers.

Example request


```
{
  "contact_support": 1,
  "enabled": 1,
  "from": "<a href="
mailto:postmaster@example.com">postmaster@example.com</a>",
  "is_minimal": 1,
  "issues": [
    {
      "component": "mail_server",
      "corrective_action": {
        "code": "53149746",
        "message": "Check the hostname of the SMTP server"
      },
      "destination": "mailhost1.example.com",
      "issue": {
        "code": "53149746",
        "message": "SMTP connectivity check failed for destination:
mailhost. Error: Could not resolve host - 'mailhost'"
      },
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ],
  "mail_hosts": [
    "mailhost1.example.com",
    "mailhost2.example.com"
  ],
  "ondemand_enabled": 1,
  "partner_addresses": [
    "<a href="mailto:user1@partner.com">user1@partner.com</a>",
    "<a href="mailto:user2@partner.com">user2@partner.com</a>"
  ],
  "proxy_url": "proxy.company.com",
  "smtp_encryption": "none",
  "to": [
    "<a href="mailto:user1@example.com">user1@example.com</a>",
    "<a href="mailto:user2@example.com">user2@example.com</a>"
  ],
  "transport": "smtp"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8650862	The SMTP mail host provided cannot be empty
8650863	A maximum of 5 SMTP mail hosts can be provided
8650864	A maximum of 5 email addresses can be provided
8650865	A maximum of 5 partner email addresses can be provided
8650880	Automatic update requires AutoSupport to be enabled
8650881	Automatic update requires AutoSupport to use the HTTPS transport
8650882	Automatic update requires AutoSupport OnDemand to be enabled
8650886	The provided parameter requires an effective cluster version of ONTAP 9.15.1 or later
8650887	Username or password is not allowed in the AutoSupport url and put-url fields
8650889	The provided parameter requires an effective cluster version of ONTAP 9.16.1 or later
53149727	The proxy URI provided is invalid
53149728	The SMTP mail host URI provided is invalid
53149732	The proxy URI provided is invalid. IPv6 addresses must be enclosed within square brackets
53149737	The proxy URI provided specifies an unsupported scheme

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

autosupport_connectivity_corrective_action

Name	Type	Description
code	string	Corrective action code
message	string	Corrective action message. The corrective action might contain commands which needs to be executed on the ONTAP CLI. • example: Check the hostname of the SMTP server • readOnly: 1 • Introduced in: 9.6 • x-nullable: true

autosupport_connectivity_issue

Name	Type	Description
code	string	Error code
message	string	Error message

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

autosupport_issues

Name	Type	Description
component	string	The name of the component where the issue occurred.

Name	Type	Description
corrective_action	autosupport_connectivity_corrective_action	
destination	string	The HTTPS/SMTP/AOD AutoSupport Destination.
issue	autosupport_connectivity_issue	
node	node	

autosupport

Name	Type	Description
contact_support	boolean	Specifies whether to send the AutoSupport messages to vendor support.
enabled	boolean	Specifies whether the AutoSupport daemon is enabled. When this setting is disabled, delivery of all AutoSupport messages is turned off.
from	string	The e-mail address from which the AutoSupport messages are sent. To generate node-specific 'from' addresses, enable '-node-specific-from' parameter via ONTAP CLI. • example: postmaster@example.com • format: email • Introduced in: 9.6 • x-nullable: true
is_minimal	boolean	Specifies whether the system information is collected in compliant form, to remove private data or in complete form, to enhance diagnostics.
issues	array[autosupport_issues]	A list of connectivity issues to the HTTPS/SMTP/AOD AutoSupport destinations on the nodes in the cluster along with the corrective actions.

Name	Type	Description
mail_hosts	array[string]	The names of the mail servers used to deliver AutoSupport messages via SMTP.
ondemand_enabled	boolean	Specifies whether the AutoSupport OnDemand feature is enabled. When AutoSupport OnDemand is enabled, support personnel can remotely trigger new AutoSupport messages, resend existing AutoSupport messages, and decline the delivery of unwanted AutoSupport messages. When this option is disabled, the cluster does not respond to any AutoSupport OnDemand requests from support personnel.
partner_addresses	array[string]	The list of partner addresses.
proxy_url	string	Proxy server for AutoSupport message delivery via HTTPS. Optionally specify a username/password for authentication with the proxy server.
smtp_encryption	string	The encryption protocol used to deliver AutoSupport messages via SMTP to the configured mail_hosts.
to	array[string]	The e-mail addresses to which the AutoSupport messages are sent.
transport	string	The name of the transport protocol used to deliver AutoSupport messages. 'http' transport is no longer supported by AutoSupport servers.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage AutoSupport messages

Support AutoSupport messages endpoint overview

Overview

Use this API to invoke and retrieve AutoSupport messages from the nodes in the cluster.

This API supports POST and GET calls. Use a POST call to invoke AutoSupport and a GET call to retrieve AutoSupport messages.

Examples

Invoking an AutoSupport on all nodes in the cluster

The following example invokes an AutoSupport on every node in the cluster.
Note that AutoSupport is invoked on all nodes in the cluster if the `node` parameter is omitted. Also, note that the `subject` line is the same when invoking on all nodes.

By default, the response is an empty object. If `return_records=true` is passed in the request, the response includes information about the node and the index of the invoked AutoSupport message.

```
# The API:
POST /support/autosupport/messages

# The call:
curl -X POST "https://<mgmt-
```

```
ip>/api/support/autosupport/messages?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{ \"
message\": \"test_msg\", \"type\": \"all\"}"

# The response:
201 CREATED
{
"num_records": 6,
"records": [
  {
    "index": 4,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/4/http"
      }
    }
  },
  {
    "index": 4,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/4/smtp"
      }
    }
```

```
  },
  {
    "index": 4,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/4/noteto"
      }
    }
  },
  {
    "index": 2,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/2/http"
      }
    }
  },
  {
    "index": 2,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "_links": {
        "self": {
```

```
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/2/smtp"
      }
    }
  },
  {
    "index": 2,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/2/noteto"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/support/autosupport/messages/"
  }
}
}
```

Invoking an AutoSupport on a single node

The following examples invoke an AutoSupport on a single node in the cluster.
Note that AutoSupport is invoked on all nodes in the cluster if the `node` parameter is omitted. You can specify the node-name with either `node` or `node.name` parameter. You can also specify UUID of the node with the `node.uuid` parameter.

By default, the response is an empty object. If `return_records=true` is passed in the request, the response includes information about the node and the index of the invoked AutoSupport message.

```
# The API:
POST /support/autosupport/messages

# The call:
curl -X POST "https://<mgmt-
ip>/api/support/autosupport/messages?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"message\": \"test_msg\", \"type\": \"test\", \"node\": { \"name\":
\"node1\" }}"

# The response:
201 CREATED
{
"num_records": 3,
"records": [
  {
    "index": 8,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/8/http"
      }
    }
  },
  {
    "index": 8,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
```

```
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/8/smtp"
      }
    }
  },
  {
    "index": 8,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/8/noteto"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/support/autosupport/messages/"
  }
}
}
```


```
# The call:
curl -X POST "https://<mgmt-
ip>/api/support/autosupport/messages?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"message\": \"test_msg\", \"type\": \"test\", \"node.name\":\"node2\"}"

# The response:
201 CREATED
```

```
{
"num_records": 3,
"records": [
  {
    "index": 4,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/4/http"
      }
    }
  },
  {
    "index": 4,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/4/smtp"
      }
    }
  },
  {
    "index": 4,
    "node": {
      "name": "node2",
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
```

```
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/4/noteto"
      }
    }
  },
],
"_links": {
  "self": {
    "href": "/api/support/autosupport/messages/"
  }
}
}
```


```
# The call:
curl -X POST "https://<mgmt-
ip>/api/support/autosupport/messages?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{
\"message\": \"test_msg\", \"type\": \"test\", \"node.uuid\":\"092e0298-
f250-11e8-9a05-005056bb6666\"}"

# The response:
201 CREATED
```


```
{
"num_records": 3,
"records": [
  {
    "index": 5,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
```

```
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/5/http"
      }
    }
  },
  {
    "index": 5,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/5/smtp"
      }
    }
  },
  {
    "index": 5,
    "node": {
      "name": "node1",
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/5/noteto"
      }
    }
  }
```

```
],
"_links": {
  "self": {
    "href": "/api/support/autosupport/messages/"
  }
}
}
```

Retrieving AutoSupport messages from all nodes in the cluster

The following example retrieves AutoSupport messages from every node in the cluster.
Note that if the *fields=** parameter is not specified, only node, index, and destination fields are returned.
Filters can be added on the fields to limit the results.

```
# The API:
GET /support/autosupport/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/support/autosupport/messages?fields=*&return_timeout=15" -H
"accept: application/hal+json"

# The response:
200 OK
{
"records": [
  {
    "node": {
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "index": 1,
    "destination": "smtp",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "ignore",
    "generated_on": "2019-03-28T10:18:04-04:00",
    "_links": {
      "self": {
```

```
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/1/smtp"
      }
    }
  },
  {
    "node": {
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "index": 1,
    "destination": "http",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "sent_successful",
    "generated_on": "2019-03-28T10:18:04-04:00",
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/1/http"
      }
    }
  },
  {
    "node": {
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "index": 1,
    "destination": "noteto",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "ignore",
    "generated_on": "2019-03-28T10:18:04-04:00",
    "_links": {
      "self": {
```

```
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/1/noteto"
      }
    }
  },
  {
    "node": {
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "index": 1,
    "destination": "smtp",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "ignore",
    "generated_on": "2019-03-28T10:18:06-04:00",
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/1/smtp"
      }
    }
  },
  {
    "node": {
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "index": 1,
    "destination": "http",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "sent_successful",
    "generated_on": "2019-03-28T10:18:06-04:00",
    "_links": {
      "self": {
```

```
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/1/http"
      }
    }
  },
  {
    "node": {
      "uuid": "e47d2630-f250-11e8-b186-005056bb5cab",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e47d2630-f250-11e8-b186-
005056bb5cab"
        }
      }
    },
    "index": 1,
    "destination": "noteto",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "ignore",
    "generated_on": "2019-03-28T10:18:06-04:00",
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/e47d2630-f250-11e8-
b186-005056bb5cab/1/noteto"
      }
    }
  }
],
"num_records": 6,
"_links": {
  "self": {
    "href": "/api/support/autosupport/messages?fields=*&return_timeout=15"
  }
}
}
```


Retrieving AutoSupport messages from a specific node and has 'sent_successful' state

The following example retrieves AutoSupport messages from a specific node in the cluster.
Note that if the `fields=*` parameter is not specified, only node, index, and destination fields are returned.
This example uses a filter on the `node.name` and `state` fields. You can add filters to any fields in the response.

```
# The API:
GET /support/autosupport/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/support/autosupport/messages?node.name=node1&state=sent_successful
&fields=*&return_timeout=15" -H "accept: application/hal+json"

# The response:
200 OK
{
"records": [
  {
    "node": {
      "uuid": "092e0298-f250-11e8-9a05-005056bb6666",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/092e0298-f250-11e8-9a05-
005056bb6666"
        }
      }
    },
    "index": 1,
    "destination": "http",
    "subject": "USER_TRIGGERED (TEST:test_msg)",
    "state": "sent_successful",
    "generated_on": "2019-03-28T10:18:04-04:00",
    "_links": {
      "self": {
        "href": "/api/support/autosupport/messages/092e0298-f250-11e8-
9a05-005056bb6666/1/http"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/support/autosupport/messages?node.name=node1&state=sent_successful&f
ields=*&return_timeout=15"
  }
}
}
```

Retrieve AutoSupport message history

GET `/support/autosupport/messages`

Introduced In: 9.6

Retrieves AutoSupport message history from all nodes in the cluster.

There can be a short delay on invoked AutoSupport messages showing in history, dependent on processing of other AutoSupports in the queue.

Related ONTAP commands

- `system node autosupport history show`

Learn more

- DOC /support/autosupport/messages

Parameters

Name	Type	In	Required	Description
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
destination	string	query	False	Filter by destination
state	string	query	False	Filter by state
generated_on	string	query	False	Filter by generated_on
index	integer	query	False	Filter by index
subject	string	query	False	Filter by subject
error.message	string	query	False	Filter by error.message
error.code	integer	query	False	Filter by error.code
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	max_records	integer	query	False
Limit the number of records returned.	return_timeout	integer	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[autosupport_message]	List of messages invoked on the node

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "destination": "http",
      "error": {
        "code": "53149746",
        "message": "Could not resolve host: test.com"
      },
      "generated_on": "2019-03-25 17:30:04 -0400",
      "index": 9,
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "state": "sent_successful",
      "subject": "WEEKLY_LOG"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error

Last error during delivery attempt. Empty if "status=sent-successful".

Name	Type	Description
code	integer	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

autosupport_message

Name	Type	Description
destination	string	Destination for the AutoSupport
error	error	Last error during delivery attempt. Empty if "status=sent-successful".

Name	Type	Description
generated_on	string	Date and Time of AutoSupport generation in ISO-8601 format
index	integer	Sequence number of the AutoSupport
node	node	
state	string	State of AutoSupport delivery
subject	string	Subject line for the AutoSupport

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create and send an AutoSupport message

POST `/support/autosupport/messages`

Introduced In: 9.6

Creates and sends an AutoSupport message with the provided input parameters.

Important note:

- By default, the response is an empty object. If `return_records=true` is passed in the request, the response includes information about the node and the index of the invoked AutoSupport message.

Recommended optional properties

- `message` - Message included in the AutoSupport subject. Use this to identify the generated AutoSupport message.

Default property values

If not specified in POST, the following are the default property values:

- `type` - *all*
- `node.name` or `node.uuid` - Not specifying these properties invokes AutoSupport on all nodes in the cluster.

Related ONTAP commands

- `system node autosupport invoke`

Learn more

- DOC /support/autosupport/messages

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
destination	string	Destination for the AutoSupport
error	error	Last error during delivery attempt. Empty if "status=sent-successful".
generated_on	string	Date and Time of AutoSupport generation in ISO-8601 format
index	integer	Sequence number of the AutoSupport
message	string	Message included in the AutoSupport subject
node	node	

Name	Type	Description
state	string	State of AutoSupport delivery
subject	string	Subject line for the AutoSupport
type	string	Type of AutoSupport collection to issue
uri	string	Alternate destination for the AutoSupport

Example request

```
{
  "destination": "http",
  "error": {
    "code": "53149746",
    "message": "Could not resolve host: test.com"
  },
  "generated_on": "2019-03-25 17:30:04 -0400",
  "index": 9,
  "message": "invoked_test_autosupport_rest",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "sent_successful",
  "subject": "WEEKLY_LOG",
  "type": "test",
  "uri": "https://1.2.3.4/delivery_uri"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[autosupport_message]	List of messages invoked on the node

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "destination": "http",
      "error": {
        "code": "53149746",
        "message": "Could not resolve host: test.com"
      },
      "generated_on": "2019-03-25 17:30:04 -0400",
      "index": 9,
      "message": "invoked_test_autosupport_rest",
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "state": "sent_successful",
      "subject": "WEEKLY_LOG",
      "type": "test",
      "uri": "https://1.2.3.4/delivery_uri"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8650851	AutoSupport invocation failed because AutoSupport collection is disabled
8650852	AutoSupport invocation failed because the trigger is disabled

Error Code	Description
8650853	AutoSupport invocation failed because the trigger rate is higher than the maximum supported value
8650866	The message parameter is not supported with performance AutoSupports
8650884	The specified field is not allowed for the current operation
8650885	The specified field cannot be empty
53149748	The destination URI provided for the invoked AutoSupport is invalid

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

error

Last error during delivery attempt. Empty if "status=sent-successful".

Name	Type	Description
code	integer	Error code
message	string	Error message

href

Name	Type	Description
href	string	

_links

node

Name	Type	Description
name	string	
uuid	string	

autosupport_message

Name	Type	Description
destination	string	Destination for the AutoSupport
error	error	Last error during delivery attempt. Empty if "status=sent-successful".
generated_on	string	Date and Time of AutoSupport generation in ISO-8601 format
index	integer	Sequence number of the AutoSupport
message	string	Message included in the AutoSupport subject
node	node	
state	string	State of AutoSupport delivery
subject	string	Subject line for the AutoSupport

Name	Type	Description
type	string	Type of AutoSupport collection to issue
uri	string	Alternate destination for the AutoSupport

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve information about an AutoSupport message

GET `/support/autosupport/messages/{node.uuid}/{index}/{destination}`

Introduced In: 9.14

Retrieves information about a single Autosupport message.

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
index	string	path	True	AutoSupport message sequence number

Name	Type	In	Required	Description
destination	string	path	True	The destination for this AutoSupport message. • enum: ["smtp", "http", "noteto", "retransmit"]
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
destination	string	Destination for the AutoSupport
error	error	Last error during delivery attempt. Empty if "status=sent-successful".
generated_on	string	Date and Time of AutoSupport generation in ISO-8601 format
index	integer	Sequence number of the AutoSupport
node	node	
state	string	State of AutoSupport delivery
subject	string	Subject line for the AutoSupport

Example response

```
{
  "destination": "http",
  "error": {
    "code": "53149746",
    "message": "Could not resolve host: test.com"
  },
  "generated_on": "2019-03-25 17:30:04 -0400",
  "index": 9,
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "sent_successful",
  "subject": "WEEKLY_LOG"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error

Last error during delivery attempt. Empty if "status=sent-successful".

Name	Type	Description
code	integer	Error code
message	string	Error message

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage cluster configuration backup information

Support configuration-backup endpoint overview

Overview

This API retrieves the current settings for the configuration and updates configuration backup settings. The GET operation retrieves the current settings for the configuration and the PATCH operation updates the configuration backup settings.

Examples

These examples show how to retrieve and update the configuration backup settings.

Retrieving the configuration backup settings

```
# The API:
/api/support/configuration-backup

# The call:
curl -X GET "https://<mgmt-ip>/api/support/configuration-backup" -H
"accept: application/hal+json"

# The response:
{
  "url": "http://10.224.65.198/backups",
  "username": "me",
  "_links": {
      "self": {
          "href": "/api/support/configuration-backup"
      }
  }
}
```

Updating the configuration backup settings

```
# The API:
/api/support/configuration-backup

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/configuration-backup" -H
"accept: application/hal+json"

# The body:
{
  "url": "https://10.224.65.198/new_backups",
  "username": "new_me",
  "password": "new_pass",
  "validate_certificate": "true"
}

# The response header:
HTTP/1.1 200 OK
Date: Tue, 05 Jun 2018 18:17:48 GMT
Server: libzapid-httpd
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/hal+json
```

Retrieve cluster configuration backup information

GET `/support/configuration-backup`

Introduced In: 9.6

Retrieves the cluster configuration backup information.

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

Example response

```
{
  "password": "yourpassword",
  "url": "http://10.224.65.198/backups",
  "username": "me"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update cluster configuration backup information

PATCH `/support/configuration-backup`

Introduced In: 9.6

Updates the cluster configuration backup information.

Request Body

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

Example request

```
{
  "password": "yourpassword",
  "url": "http://10.224.65.198/backups",
  "username": "me"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
39387137	Invalid URL
39387138	Invalid URL Scheme
5963792	Using HTTPS for URL requires an effective cluster version of 9.7.0 or later.
5963794	Validating the certificate is supported for the HTTPS protocol only.

Definitions

See Definitions

configuration_backup

Name	Type	Description
password	string	
url	string	An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster.
username	string	
validate_certificate	boolean	Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage configuration backups

Support configuration-backup backups endpoint overview

Overview

This API supports creating, deleting and retrieving configuration backup files.
Configuration backups can be 'cluster' or 'node' type. A 'cluster' backup contains cluster-wide configuration in addition to the configuration of each node in the cluster. A 'node' backup contains only node-specific configuration such as configuration files on the root volume and the boot variables. For creating a cluster backup, a cluster-wide job is queued. For creating a node backup, a private job local to the node is queued.
In addition to the backups created using this API, ONTAP creates configuration backups automatically based on job schedules. This API supports creating configuration backups on demand only. It supports deleting and retrieving configuration backups that are created automatically or on demand.
For information on configuration backup settings for automatically created backups, see DOC /support/configuration-backup

Examples

Retrieving a list of configuration backup files

```
# The API:
/api/support/configuration-backup/backups

# The call:
curl -X GET "https://<mgmt-ip>/api/support/configuration-backup/backups"
-H "accept: application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "5cafe0f6-499f-11e9-b644-005056bbcf93",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/5cafe0f6-499f-11e9-b644-
005056bbcf93"
        }
      }
    },
    "name": "backup1.7z",
    "_links": {
      "self": {
        "href": "/api/support/configuration-backup/backups/5cafe0f6-499f-
11e9-b644-005056bbcf93/backup1.7z"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/configuration-backup/backups"
  }
}
}
```

Retrieving details of the specified configuration backup file

```
# The API:
/api/support/configuration-backup/backups/{node.uuid}/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/configuration-
backup/backups/bc2f15d0-8b93-11e9-90e9-005056bb6a30/backup1.7z" -H
"accept: application/hal+json"

# The response:
{
"node": {
  "uuid": "bc2f15d0-8b93-11e9-90e9-005056bb6a30",
  "name": "node1",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/bc2f15d0-8b93-11e9-90e9-005056bb6a30"
    }
  }
},
"name": "backup1.7z",
"type": "cluster",
"time": "2019-06-10T13:35:06-04:00",
"size": 6058408,
"backup_nodes": [
  {
    "name": "node1"
  },
  {
    "name": "node2"
  }
],
"version": "9.7.0",
"auto": false,
"download_link": "https://10.224.66.113/backups/backup1.7z",
"_links": {
  "self": {
    "href": "/api/support/configuration-backup/backups/bc2f15d0-8b93-11e9-
90e9-005056bb6a30/backup1.7z"
  }
}
}
```

Creating a configuration backup file

```
# The API:
/api/support/configuration-backup/backups

# The call:
curl -X POST "https://<mgmt-ip>/api/support/configuration-backup/backups"
-H "accept: application/hal+json" -d "@create_backup.txt"
create_backup.txt:
{
"node":
  {
    "uuid": "ac13c636-4fc9-11e9-94c2-005056bb2516",
    "name": "node1"
  },
"name": "backup3.7z"
}

# The response header:
HTTP/1.1 202 Accepted
Date: Tue, 26 Mar 2019 14:26:24 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/support/configuration-backup/backups/ac13c636-4fc9-11e9-
94c2-005056bb2516/backup3.7z
Content-Length: 189
Content-Type: application/hal+json
{
"job": {
  "uuid": "22acfb68-4fd3-11e9-94c2-005056bb2516",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/22acfb68-4fd3-11e9-94c2-005056bb2516"
    }
  }
}
}
```

Deleting a configuration backup file

```
# The API:
/api/support/configuration-backup/backups/{node.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/configuration-
backup/backups/5cafe0f6-499f-11e9-b644-005056bbcf93/backup1.7z" -H
"content-type: application/json"

# The response header:
HTTP/1.1 200 OK
Date: Tue, 26 Mar 2019 14:32:23 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/hal+json
```

Retrieve configuration backup files

GET `/support/configuration-backup/backups`

Introduced In: 9.7

Retrieves a list of configuration backup files.

Related ONTAP commands

- `system configuration backup show`

Parameters

Name	Type	In	Required	Description
time	string	query	False	Filter by time
download_link	string	query	False	Filter by download_link
auto	boolean	query	False	Filter by auto
type	string	query	False	Filter by type
version	string	query	False	Filter by version

Name	Type	In	Required	Description
backup_nodes.name	string	query	False	Filter by backup_nodes.name
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
size	integer	query	False	Filter by size
name	string	query	False	Filter by name
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[configuration_backup_file]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "backup_nodes": [
        {
          "name": "string"
        }
      ],
      "download_link": "https://10.224.65.198/backups/backup_file.7z",
      "name": "backup_file.7z",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "size": 4787563,
      "time": "2019-02-04 13:33:48 -0500",
      "type": "string",
      "version": "9.7.0"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

backup_node

The node name in the backup.

Name	Type	Description
name	string	

_links

Name	Type	Description
self	href	

node

The node that owns the configuration backup.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

configuration_backup_file

The configuration backup file.

Name	Type	Description
auto	boolean	Indicates if the backup was created automatically.
backup_nodes	array[backup_node]	The list of nodes included in the backup.

Name	Type	Description
download_link	string	The link to download the backup file.
name	string	The backup name.
node	node	The node that owns the configuration backup.
size	integer	The size of the backup in bytes.
time	string	The backup creation time.
type	string	The backup type.
version	string	The software version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create a configuration backup

POST `/support/configuration-backup/backups`

Introduced In: 9.7

Creates a configuration backup. The required backup file name must end with .7z extension.

Required properties

- `node.uuid` or `node.name` - The node UUID or node name on which the configuration backup will be created.
- `name` - The backup file name

Related ONTAP commands

- `system configuration backup create`

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
auto	boolean	Indicates if the backup was created automatically.
backup_nodes	array[backup_node]	The list of nodes included in the backup.
download_link	string	The link to download the backup file.
name	string	The backup name.
node	node	The node that owns the configuration backup.
size	integer	The size of the backup in bytes.
time	string	The backup creation time.
type	string	The backup type.
version	string	The software version.

Example request

```
{
  "backup_nodes": [
    {
      "name": "string"
    }
  ],
  "download_link": "https://10.224.65.198/backups/backup_file.7z",
  "name": "backup_file.7z",
  "node": {
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "size": 4787563,
  "time": "2019-02-04 13:33:48 -0500",
  "type": "string",
  "version": "9.7.0"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

```
Status: 201, Created
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5963818	Failed to queue private job.
5963819	Failed to queue cluster job.
5963871	Requested backup name is missing .7z suffix.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

backup_node

The node name in the backup.

Name	Type	Description
name	string	

href

Name	Type	Description
href	string	

_links

node

The node that owns the configuration backup.

Name	Type	Description
name	string	
uuid	string	

configuration_backup_file

The configuration backup file.

Name	Type	Description
auto	boolean	Indicates if the backup was created automatically.
backup_nodes	array[backup_node]	The list of nodes included in the backup.
download_link	string	The link to download the backup file.
name	string	The backup name.
node	node	The node that owns the configuration backup.
size	integer	The size of the backup in bytes.
time	string	The backup creation time.

Name	Type	Description
type	string	The backup type.
version	string	The software version.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a configuration backup

DELETE `/support/configuration-backup/backups/{node.uuid}/{name}`

Introduced In: 9.7

Deletes a configuration backup.

Related ONTAP commands

- `system configuration backup delete`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	UUID of the node that owns the configuration backup.
name	string	path	True	Name of the configuration backup to be deleted.

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5963826	Failed to delete backup file.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve configuration backup file details

GET `/support/configuration-backup/backups/{node.uuid}/{name}`

Introduced In: 9.7

Retrieves details of the specified configuration backup file.

Related ONTAP commands

- `system configuration backup show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	UUID of the node that owns the configuration backup.
name	string	path	True	Name of the configuration backup.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
auto	boolean	Indicates if the backup was created automatically.
backup_nodes	array[backup_node]	The list of nodes included in the backup.
download_link	string	The link to download the backup file.
name	string	The backup name.
node	node	The node that owns the configuration backup.
size	integer	The size of the backup in bytes.
time	string	The backup creation time.

Name	Type	Description
type	string	The backup type.
version	string	The software version.

Example response


```
{
  "backup_nodes": [
    {
      "name": "string"
    }
  ],
  "download_link": "https://10.224.65.198/backups/backup_file.7z",
  "name": "backup_file.7z",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "size": 4787563,
  "time": "2019-02-04 13:33:48 -0500",
  "type": "string",
  "version": "9.7.0"
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
5963777	Configuration backup file does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

backup_node

The node name in the backup.

Name	Type	Description
name	string	

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

The node that owns the configuration backup.

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage core dumps

Support coredump coredumps endpoint overview

Overview

The core dump GET API retrieves all of the core dumps on the cluster or a node. The core dump DELETE API deletes a specified core dump.
Some fields are only populated for core dump type "kernel". Refer to the model for further information. Fields will not be displayed if they are not populated.
A core can be deleted even if the core is in the process of being saved.

Examples

1) Retrieving a list of core dumps from the cluster

The following example returns a list of core dumps on the cluster:

```
# The API:
/api/support/coredump/coredumps

# The call:
curl -X GET "https://<mgmt-ip>/api/support/coredump/coredumps" -H "accept:
application/hal+json"

# The response:
{
"records": [
  {
    "node": {
      "uuid": "227683c1-e9c7-11eb-b995-005056bbbfb3",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/227683c1-e9c7-11eb-b995-
005056bbbfb3"
        }
      }
    },
    "type": "kernel",
    "name": "core.4136886422.2021-07-21.20_20_53.nz",
```

```
    "_links": {
      "self": {
        "href": "/api/support/coredump/coredumps/227683c1-e9c7-11eb-b995-
005056bbbfb3/core.4136886422.2021-07-21.20_20_53.nz"
      }
    }
  },
  {
    "node": {
      "uuid": "227683c1-e9c7-11eb-b995-005056bbbfb3",
      "name": "node2",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/227683c1-e9c7-11eb-b995-
005056bbbfb3"
        }
      }
    },
    "type": "application",
    "name": "mlogd.968.4136886422.2021-07-22.01_10_01.ucore.bz2",
    "_links": {
      "self": {
        "href": "/api/support/coredump/coredumps/227683c1-e9c7-11eb-b995-
005056bbbfb3/mlogd.968.4136886422.2021-07-22.01_10_01.ucore.bz2"
      }
    }
  },
  {
    "node": {
      "uuid": "d583d44e-e9c6-11eb-a270-005056bb47f9",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/d583d44e-e9c6-11eb-a270-
005056bb47f9"
        }
      }
    },
    "type": "kernel",
    "name": "core.4136886421.2021-07-21.17_57_02.nz",
    "_links": {
      "self": {
        "href": "/api/support/coredump/coredumps/d583d44e-e9c6-11eb-a270-
005056bb47f9/core.4136886421.2021-07-21.17_57_02.nz"
      }
    }
```

```
  },
  {
    "node": {
      "uuid": "d583d44e-e9c6-11eb-a270-005056bb47f9",
      "name": "node1",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/d583d44e-e9c6-11eb-a270-
005056bb47f9"
        }
      }
    },
    "type": "application",
    "name": "mlogd.979.4136886421.2021-07-22.01_11_37.ucore.bz2",
    "_links": {
      "self": {
        "href": "/api/support/coredump/coredumps/d583d44e-e9c6-11eb-a270-
005056bb47f9/mlogd.979.4136886421.2021-07-22.01_11_37.ucore.bz2"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/support/coredump/coredumps"
  }
}
}
```


2) Retrieving a specific core dump

The following example returns the requested core dump. If there is no core dump with the requested node UUID and name, an error is returned.

```
# The API:
/api/support/coredump/coredumps/{node.uuid}/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/coredump/coredumps/d583d44e-
e9c6-11eb-a270-005056bb47f9/core.4136886421.2021-07-21.17_57_02.nz" -H
"accept: application/hal+json"

# The response:
{
"node": {
  "uuid": "d583d44e-e9c6-11eb-a270-005056bb47f9",
  "name": "node1",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/d583d44e-e9c6-11eb-a270-005056bb47f9"
    }
  }
},
"type": "kernel",
"name": "core.4136886421.2021-07-21.17_57_02.nz",
"panic_time": "2021-07-21T13:57:02-04:00",
"size": 945111148,
"md5_data_chksum": "611a6fa50d230a1af402f3724ab320af",
"is_saved": true,
"_links": {
  "self": {
    "href": "/api/support/coredump/coredumps/d583d44e-e9c6-11eb-a270-
005056bb47f9/core.4136886421.2021-07-21.17_57_02.nz"
  }
}
}
```

3) Deleting a core dump

The following example deletes the requested core dump. If there is no core dump with the requested node UUID and name to delete, an error is returned.

```
# The API:
/api/support/coredump/coredumps/{node.uuid}/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/coredump/coredumps/d583d44e-
e9c6-11eb-a270-005056bb47f9/mlogd.979.4136886421.2021-07-
22.01_11_37.ucore.bz2" -H "accept: application/hal+json"

# The response header:
HTTP/1.1 200 OK
Date: Thu, 22 Jul 2021 01:32:24 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 3
Content-Type: application/hal+json
```

Retrieve core dumps

GET `/support/coredump/coredumps`

Introduced In: 9.10

Retrieves a collection of coredumps.

Related ONTAP commands

- `system node coredump show`

Parameters

Name	Type	In	Required	Description
size	integer	query	False	Filter by size
panic_time	string	query	False	Filter by panic_time
name	string	query	False	Filter by name
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
type	string	query	False	Filter by type

Name	Type	In	Required	Description
is_partial	boolean	query	False	Filter by is_partial
is_saved	boolean	query	False	Filter by is_saved
md5_data_checksum	string	query	False	Filter by md5_data_checksum
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[coredump]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "md5_data_checksum": "5118488cc5065e33a16986001b1ffa48",
      "name": "core.4136886413.2021-03-01.22_09_11.nz",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "panic_time": "2021-03-01 17:09:11 -0500",
      "size": 1161629804,
      "type": "kernel"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

coredump

Name	Type	Description
_links	_links	
is_partial	boolean	Specifies whether or not the core is a partial core. Applicable only to kernel core dump type.
is_saved	boolean	Specifies whether or not the core file is saved.
md5_data_checksum	string	MD5 checksum of the compressed data of core. Applicable only to kernel core dump type.
name	string	Core name
node	node	

Name	Type	Description
panic_time	string	Time of panic that generated the core.
size	integer	Size of core, in bytes. Applicable only to kernel core dump type.
type	string	Core type, kernel or application

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete a core dump

DELETE `/support/coredump/coredumps/{node.uuid}/{name}`

Introduced In: 9.10

Deletes a core dump.

Related ONTAP commands

- `system node coredump delete`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
name	string	path	True	Core name
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve a core dump

GET `/support/coredump/coredumps/{node.uuid}/{name}`

Introduced In: 9.10

Retrieves a specific core dump.

Related ONTAP commands

- `system node coredump show`

Parameters

Name	Type	In	Required	Description
node.uuid	string	path	True	Node UUID
name	string	path	True	Core name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
is_partial	boolean	Specifies whether or not the core is a partial core. Applicable only to kernel core dump type.
is_saved	boolean	Specifies whether or not the core file is saved.
md5_data_checksum	string	MD5 checksum of the compressed data of core. Applicable only to kernel core dump type.
name	string	Core name
node	node	
panic_time	string	Time of panic that generated the core.

Name	Type	Description
size	integer	Size of core, in bytes. Applicable only to kernel core dump type.
type	string	Core type, kernel or application

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "md5_data_checksum": "5118488cc5065e33a16986001b1ffa48",
  "name": "core.4136886413.2021-03-01.22_09_11.nz",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "panic_time": "2021-03-01 17:09:11 -0500",
  "size": 1161629804,
  "type": "kernel"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage EMS configuration

Support EMS endpoint overview

Overview

This endpoint is used to configure general parameters of the Event Management System (EMS).

Examples

Configuring the system-wide email parameters

```
# The API:
PATCH /support/ems

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/ems" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_config_patch.txt"
test_ems_config_patch.txt(body):
{
"mail_from": "administrator@mycompany.com",
"mail_server": "mycompany.com",
"mail_server_user": "smtp"
}

# The response:
200 OK
```

Retrieving the EMS configuration

The following example retrieves EMS configuration for the cluster.

```
# The API:
GET /support/ems

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems" -H "accept:
application/hal+json"

# The response:
200 OK
{
"mail_from": "admin@localhost",
"mail_server": "localhost",
"pubsub_enabled": true,
"_links": {
  "self": {
    "href": "/api/support/ems"
  }
}
}
```

Retrieve an EMS configuration

GET `/support/ems`

Introduced In: 9.6

Retrieves the EMS configuration.

Related ONTAP commands

- `event config show`

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
mail_from	string	Mail from
mail_server	string	Mail server (SMTP)
mail_server_password	string	Password for Mail server (SMTP)
mail_server_user	string	Username for Mail server (SMTP)
proxy_password	string	Password for HTTP/HTTPS proxy
proxy_url	string	HTTP/HTTPS proxy URL
proxy_user	string	User name for HTTP/HTTPS proxy
pubsub_enabled	boolean	Is Publish/Subscribe Messaging Enabled?

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "mail_from": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
  "mail_server": "mail.mycompany.com",
  "mail_server_password": "password",
  "mail_server_user": "user",
  "proxy_password": "password",
  "proxy_url": "https://proxyserver.mycompany.com",
  "proxy_user": "proxy_user",
  "pubsub_enabled": 1
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an EMS configuration

PATCH `/support/ems`

Introduced In: 9.6

Updates the EMS configuration.

Related ONTAP commands

- `event config modify`

Request Body

Name	Type	Description
mail_from	string	Mail from
mail_server	string	Mail server (SMTP)
mail_server_password	string	Password for Mail server (SMTP)
mail_server_user	string	Username for Mail server (SMTP)
proxy_password	string	Password for HTTP/HTTPS proxy
proxy_url	string	HTTP/HTTPS proxy URL
proxy_user	string	User name for HTTP/HTTPS proxy
pubsub_enabled	boolean	Is Publish/Subscribe Messaging Enabled?

Example request

```
{
  "mail_from": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
  "mail_server": "mail.mycompany.com",
  "mail_server_password": "password",
  "mail_server_user": "user",
  "proxy_password": "password",
  "proxy_url": "https://proxyserver.mycompany.com",
  "proxy_user": "proxy_user",
  "pubsub_enabled": 1
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983123	The validation of the mail server provided failed
983137	The proxy URL provided is invalid
983139	The IPv6 proxy URL provided is invalid
983140	The proxy URL provided contains an invalid scheme. The only supported scheme is 'http'
983160	The provided parameter requires an effective cluster version of ONTAP 9.9.1 or later
983220	The proxy URL provided contains an invalid scheme. The only supported schemes are 'http' and 'https'
983224	The mail server URL cannot contain a username or password
983225	The mail server username cannot be set without a mail server URL
983226	The mail server password cannot be set without a mail server username
983227	The provided field requires an effective cluster version of ONTAP 9.15.1 or later
983229	The proxy URL cannot contain a username or password

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ems_config

Name	Type	Description
mail_from	string	Mail from
mail_server	string	Mail server (SMTP)
mail_server_password	string	Password for Mail server (SMTP)
mail_server_user	string	Username for Mail server (SMTP)
proxy_password	string	Password for HTTP/HTTPS proxy
proxy_url	string	HTTP/HTTPS proxy URL
proxy_user	string	User name for HTTP/HTTPS proxy
pubsub_enabled	boolean	Is Publish/Subscribe Messaging Enabled?

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Manage application logs

Support EMS application-logs endpoint overview

Overview

A POST request allows a standalone application to log its events on the ONTAP system as EMS events and optionally generate AutoSupports. This event information is encapsulated in an app.log.x event, or callhome.client.app.x event in case AutoSupport generation is required, based on the event's severity.

> This API only supports POST. Generated events can be retrieved using the /api/support/ems/events API.

Examples

Creating a new app.log.* event

The following example generates an app.log.error event.

```
# The API:
POST /api/support/ems/application-logs

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/application-logs" -H
"accept: application/hal+json" -H "Content-Type: application/json" -d "{
\"computer_name\": \"W12-R2-DC\", \"event_source\": \"SnapCenter
Software\", \"app_version\": \"3.0.0.2373\", \"event_id\": 10001,
\"category\": \"error\", \"event_description\": \"Clone split job
failed\", \"severity\": \"error\", \"autosupport_required\": false}"

# The response:
201 CREATED
{}
```

Retrieving a list of events generated by this API

The following example retrieves all app.log.* events.

```
# The API:
GET /api/support/ems/events

# The call:
curl -X GET "https://<mgmt-
ip>/api/support/ems/events?message.name=app.log.*" -H "accept:
application/hal+json"

# The response:
200 OK
{
"records": [
  {
    "node": {
      "name": "node1",
      "uuid": "d96d5d8d-118a-11ec-aad8-005056bb974c",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/d96d5d8d-118a-11ec-aad8-
005056bb974c"
        }
      }
    },
    "index": 7865,
    "time": "2021-09-17T09:36:28-04:00",
    "message": {
      "severity": "emergency",
      "name": "app.log.emerg"
    },
    "log_message": "app.log.emerg: iMac: iPad ipad3: (10001) handheld:
TestLine1",
    "_links": {
      "self": {
        "href": "/api/support/ems/events/node1/7865"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/ems/events?message.name=app.log.*"
  }
}
}
```

Create an application log

POST `/support/ems/application-logs`

Introduced In: 9.11

Creates an app.log.* event. Setting the "autosupport_required" flag causes callhome.client.app.* events also to be generated, which in turn triggers AutoSupports.

Required properties

- `computer_name` - Client computer connected to the cluster.
- `event_source` - Client application that generated this event.
- `app_version` - Client application version.
- `event_id` - Application eventID.
- `category` - Event category.
- `event_description` - Event description.
- `severity` - Severity of the event.
- `autosupport_required` - Indicates whether AutoSupport generation is required.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
app_version	string	Client application version.
autosupport_required	boolean	Indicates whether AutoSupport generation is required.
category	string	Event category.
computer_name	string	Client computer connected to the cluster.

Name	Type	Description
event_description	string	Event description, which corresponds to the subject parameter in the generated event.
event_id	integer	Application eventID.
event_source	string	Client application that generated this event.
severity	string	Severity

Example request

```
{
  "app_version": "3.0.0.2373",
  "autosupport_required": "",
  "category": "Error",
  "computer_name": "W12-R2-DC",
  "event_description": "Clone split job failed",
  "event_id": 10001,
  "event_source": "SnapCenter Software",
  "severity": "error"
}
```

Response

```
Status: 201, Created
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983173	Application log event generation failed.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

ems_application_log

Input for generation of app.log.x and callhome.client.app.x events.

Name	Type	Description
app_version	string	Client application version.
autosupport_required	boolean	Indicates whether AutoSupport generation is required.
category	string	Event category.
computer_name	string	Client computer connected to the cluster.
event_description	string	Event description, which corresponds to the subject parameter in the generated event.
event_id	integer	Application eventID.
event_source	string	Client application that generated this event.
severity	string	Severity

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Manage event destinations

Support EMS destinations endpoint overview

Overview

Manages the list of destinations. A destination is defined by a type and a place to which an event's information is transmitted.

Destination Types

An EMS destination is defined by a single type, which is one of the following:

- email
- syslog
- rest_api
- snmp

Email

The 'email' type allows you to define a mailbox where information about an observed event is sent by SMTP. Enter the address in the destination field in a valid format.
For example: administrator@mycompany.com

Syslog

The 'syslog' type allows you to specify a remote syslog server that can receive information about an observed event. Enter the hostname or IP address in the destination field.
For example: syslog.mycompany.com, 192.168.1.1

You can optionally specify the port and transport protocol to be used. The supported transport protocols are:

- udp_unencrypted
- tcp_unencrypted
- tcp_encrypted

#

If transport is specified and the port is not specified, the default port for each transport is automatically selected. The default port for udp_unencrypted is 514, for tcp_unencrypted 601, and for tcp_encrypted 6514. The default transport protocol is udp_unencrypted.

#

The message format to be used can also be optionally specified. The supported message formats are:

- legacy_netapp (format: <PRIVAL>TIMESTAMP [HOSTNAME:Event-name:Event-severity]: MSG)
- rfc_5424 (format: <PRIVAL>VERSION TIMESTAMP HOSTNAME Event-source - Event-name - MSG)

#

If the default timestamp or hostname formats in the message format needs to be overridden, use timestamp_override and hostname_override properties.

The supported timestamp formats are:

- no_override (timestamp format based on the syslog.format.message property i.e. rfc_3164 if syslog.format.message is legacy_netapp, iso_8601_local_time if syslog.format.message is rfc_5424)
- rfc_3164 (format: Mmm dd hh:mm:ss)
- iso_8601_local_time (format: YYYY-MM-DDThh:mm:ss+/-hh:mm)
- iso_8601_utc (format: YYYY-MM-DDThh:mm:ssZ)

#

The supported hostname formats are:

- no_override (hostname format based on the syslog.format.message property i.e. fqdn if syslog.format.message is rfc_5424, hostname_only if syslog.format.message is legacy_netapp)
- fqdn (Fully Qualified Domain Name)
- hostname_only

Rest API

The 'rest_api' type allows you to define a URL where information about an observed event is sent using the REST protocol. Enter the URL in the destination field.
The URL must contain a valid transmission schema which can be one of the following:

- http
- https

#

Using the *https* schema, you can configure a client-side certificate for mutual authentication. A client-side certificate is specified by the `ca` and `serial_number` fields in the `certificate` object. The `name` field of the `certificate` object is read-only and cannot be used to configure a client-side certificate.

For example: http://rest.mycompany.com, https://192.168.1.1

SNMP

The 'snmp' type describes addresses where information about an observed event is sent using SNMP traps. The system defines a default instance of this type and it is restricted to read-only.
This type has the following limitations:

- Cannot create new destinations of type 'snmp'
- Cannot modify the default 'snmp' destination

SNMP trap host details need to be configured through one of the following:

Type	Command / API
CLI	'system snmp traphost'
ZAPI	'snmp-traphost-add' / 'snmp-traphost-delete'

Examples

Retrieving the list of active destinations

```
# The API:
GET /api/support/ems/destinations

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/destinations" -H "accept:
application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "name": "snmp-traphost",
    "_links": {
      "self": {
        "href": "/api/support/ems/destinations/snmp-traphost"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/ems/destinations"
  }
}
}
```

Creating a new 'email' destination

```
# The API:
POST /support/ems/destinations

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/destinations" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_destinations_post.txt"
test_ems_destinations_post.txt(body):

# JSON Body
{
"name": "Technician_Email",
"type": "email",
"destination": "technician@mycompany.com",
"filters": [
  { "name" : "critical-wafl" }
]
}

# The response:
201 Created
```

Creating a new 'syslog' destination

```
# The API:
POST /support/ems/destinations

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/destinations" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_destinations_syslog_post.txt"
test_ems_destinations_syslog_post.txt(body):

# JSON Body
{
"name": "Syslog_dest",
"type": "syslog",
"destination": "syslog.mycompany.com",
"syslog": {
  "port": 601,
  "transport": "tcp_unencrypted",
  "format": {
    "message": "rfc_5424",
    "hostname_override": "fqdn",
    "timestamp_override": "iso_8601_local_time"
  }
},
"filters": [
  { "name" : "critical-wafl" }
]
}

# The response:
201 Created
```

Retrieve a collection of event destinations

GET `/support/ems/destinations`

Introduced In: 9.6

Retrieves a collection of event destinations.

Related ONTAP commands

- `event notification destination show`
- `event notification show`

Parameters

Name	Type	In	Required	Description
filters.name	string	query	False	Filter by filters.name
system_defined	boolean	query	False	Filter by system_defined • Introduced in: 9.10
access_control_role.name	string	query	False	Filter by access_control_role.name • Introduced in: 9.13
name	string	query	False	Filter by name
certificate.serial_number	string	query	False	Filter by certificate.serial_number • maxLength: 40 • minLength: 1
certificate.ca	string	query	False	Filter by certificate.ca • maxLength: 256 • minLength: 1
certificate.name	string	query	False	Filter by certificate.name • Introduced in: 9.11
connectivity.errors.node.uuid	string	query	False	Filter by connectivity.errors.node.uuid • Introduced in: 9.11

Name	Type	In	Required	Description
connectivity.errors.node.name	string	query	False	Filter by connectivity.errors.node.name • Introduced in: 9.11
connectivity.errors.message.code	string	query	False	Filter by connectivity.errors.message.code • Introduced in: 9.11
connectivity.errors.message.message	string	query	False	Filter by connectivity.errors.message.message • Introduced in: 9.11
connectivity.errors.message.arguments.code	string	query	False	Filter by connectivity.errors.message.arguments.code • Introduced in: 9.11
connectivity.errors.message.arguments.message	string	query	False	Filter by connectivity.errors.message.arguments.message • Introduced in: 9.11
connectivity.state	string	query	False	Filter by connectivity.state • Introduced in: 9.11
syslog.format.timestamp_override	string	query	False	Filter by syslog.format.timestamp_override • Introduced in: 9.12

Name	Type	In	Required	Description
syslog.format.message	string	query	False	Filter by syslog.format.message • Introduced in: 9.12
syslog.format.hostname_override	string	query	False	Filter by syslog.format.hostname_override • Introduced in: 9.12
syslog.transport	string	query	False	Filter by syslog.transport • Introduced in: 9.12
syslog.port	integer	query	False	Filter by syslog.port • Introduced in: 9.12
type	string	query	False	Filter by type
destination	string	query	False	Filter by destination
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_control_role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "certificate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ca": "VeriSign",
        "name": "string",
        "serial_number": 1234567890
      },
      "connectivity": {
        "errors": [
          {
            "message": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
```

```
                ],
                "code": "4",
                "message": "entry doesn't exist"
              },
              "node": {
                "_links": {
                  "self": {
                    "href": "/api/resourcelink"
                  }
                },
                "name": "node1",
                "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
              }
            }
          ],
          "state": "fail"
        },
        "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
        "filters": [
          {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            },
            "name": "important-events"
          }
        ],
        "name": "Admin_Email",
        "syslog": {
          "format": {
            "hostname_override": "string",
            "message": "string",
            "timestamp_override": "string"
          },
          "port": 514,
          "transport": "string"
        },
        "system_defined": 1,
        "type": "email"
      }
    ]
  }
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

access_control_role

Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
_links	_links	
name	string	Role name

certificate

Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate.

Name	Type	Description
_links	_links	
ca	string	Client certificate issuing CA
name	string	Certificate name
serial_number	string	Client certificate serial number

arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

message

Information to be displayed to the user.

Name	Type	Description
arguments	array[arguments]	Message arguments
code	string	Unique message code.
message	string	User message.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

errors

Error object included in the event of connectivity failure.

Name	Type	Description
message	message	Information to be displayed to the user.
node	node	

connectivity

Name	Type	Description
errors	array[errors]	A list of errors encountered during connectivity checks.
state	string	Current connectivity state.

filters

Name	Type	Description
_links	_links	
name	string	

format

Name	Type	Description
hostname_override	string	Syslog Hostname Format Override. The supported hostname formats are no_override (hostname format based on the syslog.format.message property i.e. fqdn if syslog.format.message is rfc_5424, hostname_only if syslog.format.message is legacy_netapp), fqdn (Fully Qualified Domain Name) and hostname_only.
message	string	Syslog Message Format. The supported message formats are legacy_netapp (format: <PRIVAL>TIMESTAMP [HOSTNAME:Event-name:Event-severity]: MSG) and rfc_5424 (format: <PRIVAL>VERSION TIMESTAMP HOSTNAME Event-source - Event-name - MSG).
timestamp_override	string	Syslog Timestamp Format Override. The supported timestamp formats are no_override (timestamp format based on the syslog.format.message property i.e. rfc_3164 if syslog.format.message is legacy_netapp, iso_8601_local_time if syslog.format.message is rfc_5424), rfc_3164 (format: Mmm dd hh:mm:ss), iso_8601_local_time (format: YYYY-MM-DDThh:mm:ss+/-hh:mm) and iso_8601_utc (format: YYYY-MM-DDThh:mm:ssZ).

syslog

Name	Type	Description
format	format	
port	integer	Syslog Port.
transport	string	Syslog Transport Protocol.

records

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
name	string	Destination name. Valid in POST.
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.

Name	Type	Description
type	string	Type of destination. Valid in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an event destination

POST `/support/ems/destinations`

Introduced In: 9.6

Creates an event destination.

Required properties

- `name` - String that uniquely identifies the destination.
- `type` - Type of destination that is to be created.
- `destination` - String that identifies the destination. The contents of this property changes depending on type.

Recommended optional properties

- `filters.name` - List of filter names that should direct to this destination.
- `certificate` - When specifying a rest api destination, a client certificate can be provided.
- `syslog` - When specifying a syslog destination, a port, transport protocol, message format, timestamp format and hostname format can be provided.

Related ONTAP commands

- `event notification destination create`
- `event notification create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
name	string	Destination name. Valid in POST.
syslog	syslog	

Name	Type	Description
system_defined	boolean	Flag indicating system-defined destinations.
type	string	Type of destination. Valid in POST.

Example request

```
{
  "access_control_role": {
    "name": "admin"
  },
  "certificate": {
    "ca": "VeriSign",
    "name": "string",
    "serial_number": 1234567890
  },
  "connectivity": {
    "errors": [
      {
        "message": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ],
    "state": "fail"
  },
  "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
  "filters": [
    {
      "name": "important-events"
    }
  ],
  "name": "Admin_Email",
  "syslog": {
    "format": {
      "hostname_override": "string",
      "message": "string",
      "timestamp_override": "string"
    },
```

```
    "port": 514,
    "transport": "string"
  },
  "system_defined": 1,
  "type": "email"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "access_control_role": {
        "name": "admin"
      },
      "certificate": {
        "ca": "VeriSign",
        "name": "string",
        "serial_number": 1234567890
      },
      "connectivity": {
        "errors": [
          {
            "message": {
              "arguments": [
                {
                  "code": "string",
                  "message": "string"
                }
              ],
              "code": "4",
              "message": "entry doesn't exist"
            },
            "node": {
              "name": "node1",
              "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
            }
          }
        ],
        "state": "fail"
      },
      "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
      "filters": [
        {
          "name": "important-events"
        }
      ],
      "name": "Admin_Email",
      "syslog": {
        "format": {
          "hostname_override": "string",
```

```
            "message": "string",
            "timestamp_override": "string"
          },
          "port": 514,
          "transport": "string"
        },
        "system_defined": 1,
        "type": "email"
      }
    ]
  }
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983104	The syslog destination provided is invalid
983107	A provided filter does not exist
983116	The number of notifications has reached maximum capacity
983117	The number of destinations has reached maximum capacity
983129	The rest-api destination provided must contain a valid scheme, such as http// or https//
983130	The rest-api destination provided contains an invalid URL
983131	The rest-api destination provided contains an invalid IPv6 URL
983144	The security certificate information provided is incomplete. Provide the certificate and serial number
983145	The rest-api destination provided has an 'http://' scheme. It is invalid to provide certificate information

Error Code	Description
983149	New SNMP destinations cannot be created
983152	Default destinations cannot be modified or removed
983153	The security certificate provided does not exist
983154	The necessary private key is not installed on the system
983170	Connectivity check is not supported for the specified destination type on the node
983171	Connectivity check failed for the specified destination on the node
983176	Connectivity check is only supported for TCP-based syslog destinations
983179	The value for the destination field cannot be empty
983180	The destination name provided cannot be empty
983181	The destination name provided cannot contain spaces
983182	The destination name provided is invalid. The destination name must contain between 2 and 64 characters and start and end with an alphanumeric symbol or _(underscore). The allowed special characters are _(underscore) and -(hyphen)
983184	A provided property cannot be configured on the requested destination type
983200	Access control role compatibility issue with provided filters

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
name	string	Role name

certificate

Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate.

Name	Type	Description
_links	_links	
ca	string	Client certificate issuing CA
name	string	Certificate name
serial_number	string	Client certificate serial number

arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

message

Information to be displayed to the user.

Name	Type	Description
arguments	array[arguments]	Message arguments
code	string	Unique message code.
message	string	User message.

node

Name	Type	Description
name	string	
uuid	string	

errors

Error object included in the event of connectivity failure.

Name	Type	Description
message	message	Information to be displayed to the user.
node	node	

connectivity

Name	Type	Description
errors	array[errors]	A list of errors encountered during connectivity checks.
state	string	Current connectivity state.

filters

Name	Type	Description
name	string	

format

Name	Type	Description
hostname_override	string	Syslog Hostname Format Override. The supported hostname formats are no_override (hostname format based on the syslog.format.message property i.e. fqdn if syslog.format.message is rfc_5424, hostname_only if syslog.format.message is legacy_netapp), fqdn (Fully Qualified Domain Name) and hostname_only.
message	string	Syslog Message Format. The supported message formats are legacy_netapp (format: <PRIVAL>TIMESTAMP [HOSTNAME:Event-name:Event-severity]: MSG) and rfc_5424 (format: <PRIVAL>VERSION TIMESTAMP HOSTNAME Event-source - Event-name - MSG).
timestamp_override	string	Syslog Timestamp Format Override. The supported timestamp formats are no_override (timestamp format based on the syslog.format.message property i.e. rfc_3164 if syslog.format.message is legacy_netapp, iso_8601_local_time if syslog.format.message is rfc_5424), rfc_3164 (format: Mmm dd hh:mm:ss), iso_8601_local_time (format: YYYY-MM-DDThh:mm:ss+/-hh:mm) and iso_8601_utc (format: YYYY-MM-DDThh:mm:ssZ).

syslog

Name	Type	Description
format	format	
port	integer	Syslog Port.

Name	Type	Description
transport	string	Syslog Transport Protocol.

ems_destination

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
name	string	Destination name. Valid in POST.
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.
type	string	Type of destination. Valid in POST.

records

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
name	string	Destination name. Valid in POST.
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.
type	string	Type of destination. Valid in POST.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage an event destination instance

Support EMS destinations name endpoint overview

Overview

Manages a specific instance of a destination. There are limits to the information that you can modify after a destination is created. For example, you cannot change a destination's type, but you can modify the underlying details of the type.

> The system defines default destinations that cannot be removed or modified. These destinations are specified by setting the "system_defined" field to "true".

See the documentation for /support/ems/destinations for details on the various properties in a destination.

Connectivity Test

Optionally, you can request the connectivity object by specifically requesting the object in the fields query. This will perform an additional test to determine the state of the destination. The state response can include one of the following values:

- success
- fail
- not_supported

success

If the connectivity object indicates a state of 'success', then the destination check passed.

> Currently, only the 'rest_api' destination type is supported. A successful result indicates that the server received the event.

fail

If the connectivity object indicates a state of 'fail', then the destination check has not passed. The object will contain a 'error' object with additional information regarding the failure.

not_supported

If the connectivity object indicates a state of 'not_supported', then the destination check is not available for the indicated destination type. This is not considered a failure condition.

> Currently, only the 'rest_api' destination type is supported for connectivity testing.

Examples

Retrieving a specific destination instance

```
# The API:
GET /api/support/ems/destinations/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/destinations/snmp-traphost"
-H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"name": "snmp-traphost",
"type": "snmp",
"destination": "",
"filters": [
  {
    "name": "default-trap-events",
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/default-trap-events"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/support/ems/destinations/snmp-traphost"
  }
}
}
```

Check whether a destination passes connectivity tests

```
# The API:
GET /api/support/ems/destinations/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/destinations/rest-api-
destination?fields=name,connectivity.*" -H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"name": "rest-api-destination",
"connectivity": {
  "state": "fail",
  "errors": [
    {
      "message": {
        "message": "Cannot reach host mail@mail.com.",
        "code": "4",
        "arguments": [
          {
            "code": "5",
            "message": "mail@mail.com"
          }
        ],
      },
      "node": {
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/support/ems/destinations/rest-api-
destination?fields=name,connectivity.*"
  }
}
}
```

Updating an existing destination (change of email address)

```
# The API:
PATCH /api/support/ems/destinations/{name}

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/destinations/test-
destination" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "@test_ems_destinations_patch.txt"
test_ems_destinations_patch.txt(body):
{
"destination": "support@mycompany.com"
}

# The response:
200 OK
```

Deleting an existing destination

```
# The API:
DELETE /api/support/ems/destinations/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/ems/destinations/test-
destination" -H "accept: application/hal+json"

# The response:
200 OK
```

Delete an event destination

DELETE `/support/ems/destinations/{name}`

Introduced In: 9.6

Deletes an event destination.

Related ONTAP commands

- `event notification destination delete`
- `event notification delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Destination name

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983152	Default destinations cannot be modified or removed

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an event destination

GET `/support/ems/destinations/{name}`

Introduced In: 9.6

Retrieves event destinations.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter.

- `connectivity.*`

Related ONTAP commands

- `event notification destination show`
- `event notification show`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Destination name

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
name	string	Destination name. Valid in POST.
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.
type	string	Type of destination. Valid in POST.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_control_role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ca": "VeriSign",
    "name": "string",
    "serial_number": 1234567890
  },
  "connectivity": {
    "errors": [
      {
        "message": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
```

```
            "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
          }
        }
      ],
      "state": "fail"
    },
    "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
    "filters": [
      {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "important-events"
      }
    ],
    "name": "Admin_Email",
    "syslog": {
      "format": {
        "hostname_override": "string",
        "message": "string",
        "timestamp_override": "string"
      },
      "port": 514,
      "transport": "string"
    },
    "system_defined": 1,
    "type": "email"
  }
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

access_control_role

Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
_links	_links	
name	string	Role name

certificate

Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate.

Name	Type	Description
_links	_links	
ca	string	Client certificate issuing CA
name	string	Certificate name
serial_number	string	Client certificate serial number

arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

message

Information to be displayed to the user.

Name	Type	Description
arguments	array[arguments]	Message arguments
code	string	Unique message code.
message	string	User message.

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

errors

Error object included in the event of connectivity failure.

Name	Type	Description
message	message	Information to be displayed to the user.
node	node	

connectivity

Name	Type	Description
errors	array[errors]	A list of errors encountered during connectivity checks.
state	string	Current connectivity state.

filters

Name	Type	Description
_links	_links	
name	string	

format

Name	Type	Description
hostname_override	string	Syslog Hostname Format Override. The supported hostname formats are no_override (hostname format based on the syslog.format.message property i.e. fqdn if syslog.format.message is rfc_5424, hostname_only if syslog.format.message is legacy_netapp), fqdn (Fully Qualified Domain Name) and hostname_only.
message	string	Syslog Message Format. The supported message formats are legacy_netapp (format: <PRIVAL>TIMESTAMP [HOSTNAME:Event-name:Event-severity]: MSG) and rfc_5424 (format: <PRIVAL>VERSION TIMESTAMP HOSTNAME Event-source - Event-name - MSG).
timestamp_override	string	Syslog Timestamp Format Override. The supported timestamp formats are no_override (timestamp format based on the syslog.format.message property i.e. rfc_3164 if syslog.format.message is legacy_netapp, iso_8601_local_time if syslog.format.message is rfc_5424), rfc_3164 (format: Mmm dd hh:mm:ss), iso_8601_local_time (format: YYYY-MM-DDThh:mm:ss+/-hh:mm) and iso_8601_utc (format: YYYY-MM-DDThh:mm:ssZ).

syslog

Name	Type	Description
format	format	
port	integer	Syslog Port.

Name	Type	Description
transport	string	Syslog Transport Protocol.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an event destination

PATCH `/support/ems/destinations/{name}`

Introduced In: 9.6

Updates an event destination.

Recommended optional properties

- `filters.name` - New list of filters that should direct to this destination. The existing list is discarded.
- `certificate` - New certificate parameters when the destination type is `rest api`.

Related ONTAP commands

- `event notification destination modify`
- `event notification modify`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Destination name

Request Body

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.

Example request

```
{
  "access_control_role": {
    "name": "admin"
  },
  "certificate": {
    "ca": "VeriSign",
    "name": "string",
    "serial_number": 1234567890
  },
  "connectivity": {
    "errors": [
      {
        "message": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ],
    "state": "fail"
  },
  "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
  "filters": [
    {
      "name": "important-events"
    }
  ],
  "syslog": {
    "format": {
      "hostname_override": "string",
      "message": "string",
      "timestamp_override": "string"
    },
    "port": 514,
```

```
    "transport": "string"
  },
  "system_defined": 1
}
```

Response

```
Status: 200, Ok
```

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.

Example response


```
{
  "access_control_role": {
    "name": "admin"
  },
  "certificate": {
    "ca": "VeriSign",
    "name": "string",
    "serial_number": 1234567890
  },
  "connectivity": {
    "errors": [
      {
        "message": {
          "arguments": [
            {
              "code": "string",
              "message": "string"
            }
          ],
          "code": "4",
          "message": "entry doesn't exist"
        },
        "node": {
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      }
    ],
    "state": "fail"
  },
  "destination": "<a href="
mailto:administrator@mycompany.com">administrator@mycompany.com</a>",
  "filters": [
    {
      "name": "important-events"
    }
  ],
  "syslog": {
    "format": {
      "hostname_override": "string",
      "message": "string",
      "timestamp_override": "string"
    },
    "port": 514,
```

```
    "transport": "string"
  },
  "system_defined": 1
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983088	The destination name provided cannot be empty
983089	The destination name provided cannot contain spaces
983094	The destination name provided is invalid. The destination name must contain between 2 and 64 characters and start and end with an alphanumeric symbol or _(underscore). The allowed special characters are _(underscore) and -(hyphen)
983104	The syslog destination provided is invalid
983107	A provided filter does not exist
983116	The number of notifications has reached maximum capacity
983117	The number of destinations has reached maximum capacity
983129	The rest-api destination must contain a valid scheme, such as http// or https//
983130	The rest-api destination provided contains an invalid URL
983131	The rest-api destination provided contains an invalid IPv6 URL
983142	The security certificate provided does not exist
983143	The private security key provided does not exist
983144	The security certificate information provided is incomplete. Provide the certificate and serial number
983145	The rest-api destination provided has an 'http://' scheme. It is invalid to provide certificate information
983150	The type of an existing destination cannot be changed
983152	Default destinations cannot be modified or removed

Error Code	Description
983184	A provided property cannot be configured on the requested destination type
983200	Access control role compatibility issue with provided filters

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
name	string	Role name

certificate

Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate.

Name	Type	Description
_links	_links	
ca	string	Client certificate issuing CA
name	string	Certificate name
serial_number	string	Client certificate serial number

arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

message

Information to be displayed to the user.

Name	Type	Description
arguments	array[arguments]	Message arguments
code	string	Unique message code.
message	string	User message.

node

Name	Type	Description
name	string	
uuid	string	

errors

Error object included in the event of connectivity failure.

Name	Type	Description
message	message	Information to be displayed to the user.
node	node	

connectivity

Name	Type	Description
errors	array[errors]	A list of errors encountered during connectivity checks.
state	string	Current connectivity state.

filters

Name	Type	Description
name	string	

format

Name	Type	Description
hostname_override	string	Syslog Hostname Format Override. The supported hostname formats are no_override (hostname format based on the syslog.format.message property i.e. fqdn if syslog.format.message is rfc_5424, hostname_only if syslog.format.message is legacy_netapp), fqdn (Fully Qualified Domain Name) and hostname_only.
message	string	Syslog Message Format. The supported message formats are legacy_netapp (format: <PRIVAL>TIMESTAMP [HOSTNAME:Event-name:Event-severity]: MSG) and rfc_5424 (format: <PRIVAL>VERSION TIMESTAMP HOSTNAME Event-source - Event-name - MSG).
timestamp_override	string	Syslog Timestamp Format Override. The supported timestamp formats are no_override (timestamp format based on the syslog.format.message property i.e. rfc_3164 if syslog.format.message is legacy_netapp, iso_8601_local_time if syslog.format.message is rfc_5424), rfc_3164 (format: Mmm dd hh:mm:ss), iso_8601_local_time (format: YYYY-MM-DDThh:mm:ss+/-hh:mm) and iso_8601_utc (format: YYYY-MM-DDThh:mm:ssZ).

syslog

Name	Type	Description
format	format	
port	integer	Syslog Port.

Name	Type	Description
transport	string	Syslog Transport Protocol.

ems_destination

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event destination and is used to control access to the destination based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
certificate	certificate	Specifies the client-side certificate used by the ONTAP system when mutual authentication is required. This object is only applicable for **rest_api** type destinations. Both the `ca` and `serial_number` fields must be specified when configuring a certificate in a PATCH or POST request. The `name` field is read-only and cannot be used to configure a client-side certificate. • Introduced in: 9.6
connectivity	connectivity	
destination	string	Event destination
filters	array[filters]	
syslog	syslog	
system_defined	boolean	Flag indicating system-defined destinations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve events

Support EMS events endpoint overview

Overview

Queries a live collection of observed events on the system.
Note: The `filter.name` parameter is used to pass a filter to be applied to the event collection returned. To retrieve the list of available filters, refer to /support/ems/filters

Example

Querying for the latest event received by EMS

```
# The API:
GET /api/support/ems/events

# The call:
curl -X GET "https://<mgmt-
ip>/api/support/ems/events?fields=message.name&max_records=1" -H "accept:
application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "node": {
      "name": "node1",
      "uuid": "f087b8e3-99ac-11e8-b5a5-005056bb4ec7",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f087b8e3-99ac-11e8-b5a5-
005056bb4ec7"
        }
      }
    },
    "index": 661,
    "message": {
      "name": "raid.aggr.log.CP.count"
    },
    "_links": {
      "self": {
        "href": "/api/support/ems/events/node1/661"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/ems/events?fields=message.name&max_records=1"
  },
}
}
```

Retrieve observed events

GET `/support/ems/events`

Introduced In: 9.6

Retrieves a collection of observed events.

> The default behavior is to filter 'DEBUG' severity events. If those events are required, a severity query must be provided.

Related ONTAP commands

- `event log show`

Parameters

Name	Type	In	Required	Description
time	string	query	False	Filter by time
parameters.value	string	query	False	Filter by parameters.value
parameters.name	string	query	False	Filter by parameters.name
log_message	string	query	False	Filter by log_message
source	string	query	False	Filter by source
message.severity	string	query	False	Filter by message.severity
message.name	string	query	False	Filter by message.name
index	integer	query	False	Filter by index
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name

Name	Type	In	Required	Description
filter.name	string	query	False	Filter the collection returned using an event filter • Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "index": 1,
      "log_message": "string",
      "message": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "callhome.spares.low",
        "severity": "emergency"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "parameters": [
        {
          "name": "numOps",
          "value": 123
        }
      ],
      "source": "string",
```

```
      "time": "string"
    }
  ]
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983093	The provided filter is unknown.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

self

Name	Type	Description
href	string	

_links

Name	Type	Description
self	self	

_links

Name	Type	Description
self	href	

message

Name	Type	Description
_links	_links	
name	string	Message name of the event. Returned by default.
severity	string	Severity of the event. Returned by default.

node

Name	Type	Description
_links	_links	
name	string	

Name	Type	Description
uuid	string	

parameters

Name	Type	Description
name	string	Name of parameter
value	string	Value of parameter

records

Name	Type	Description
_links	_links	
index	integer	Index of the event. Returned by default.
log_message	string	A formatted text string populated with parameter details. Returned by default.
message	message	
node	node	
parameters	array[parameters]	A list of parameters provided with the EMS event.
source	string	Source
time	string	Timestamp of the event. Returned by default.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create or retrieve event filters

Support EMS filters endpoint overview

Overview

Manages the list of available filters. A filter is a named collection of rules that enable the system to identify events that require additional handling. A filter is linked with a destination to which the system sends specific events.

When EMS processes an event, each filter is evaluated for a match. More than one filter can handle a single event.

> The system defines default filters that cannot be removed or modified. These filters are specified by setting the "system_defined" field to "true".

Filter rule position

A filter's rules are evaluated sequentially, according to their position index. When a rule is added or modified, the position can be set to customize the filter's logic. If no position is specified, a new rule is appended to the end of the list.

Filter rule types

A filter rule can be one of two types: 'include' or 'exclude'.
If an event matches the criteria of the rule, the type dictates whether it should be forwarded to the destination or ignored.

Filter rule matching criteria

A valid filter rule must contain at least one set of criteria.

Name pattern

A name pattern is matched against an event's name. Multiple characters can be matched using the wildcard character '*'.

Severity

The severity pattern is matched against an event's severity. Multiple severities can be specified in a comma separated list. A single wildcard `*` will match all severities.
When multiple severities are provided in a rule, all must match for the rule to be considered matched. A pattern

can include one or more wildcard * characters. Valid values are:

- emergency
- alert
- error
- notice
- informational
- debug

SNMP trap type

The SNMP trap type pattern is matched against an event's trap type. Multiple trap types can be specified in a comma separated list. A single wildcard * matches all trap types.
When multiple trap types are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard * characters. Valid values are:

- standard
- built_in
- severity_based

Parameter criteria

A parameter criterion is matched against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.

Examples

Retrieving a list of filters whose names contain a hyphen

```
# The API:
GET /api/support/ems/filters

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/filters?name=*-*" -H
"accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "name": "default-trap-events",
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/default-trap-events"
      }
    }
  },
  {
    "name": "important-events",
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/important-events"
      }
    }
  },
  {
    "name": "no-info-debug-events",
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/no-info-debug-events"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/support/ems/filters?name=*-*"
  }
}
}
```

Creating a new filter using various matching criteria

```
# The API:
POST /api/support/ems/filters

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/filters" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_filters_post.txt"
test_ems_filters_post.txt(body):
{
"name": "test-filter",
"rules": [
  {
    "index": 1,
    "type": "include",
    "message_criteria": {
      "name_pattern": "LUN.*",
      "severities": "alert,error",
      "snmp_trap_types": "severity_based"
    },
    "parameter_criteria": [
      {
        "name_pattern": "type",
        "value_pattern": "volume"
      },
      {
        "name_pattern": "vol",
        "value_pattern": "cloud*"
      }
    ]
  }
]
}

# The response:
201 Created
```

Retrieve event filters

GET `/support/ems/filters`

Introduced In: 9.6

Retrieves a collection of event filters.

Related ONTAP commands

- `event filter show`

Parameters

Name	Type	In	Required	Description
system_defined	boolean	query	False	Filter by system_defined • Introduced in: 9.10
rules.message_criteria.name_pattern	string	query	False	Filter by rules.message_criteria.name_pattern
rules.message_criteria.severities	string	query	False	Filter by rules.message_criteria.severities
rules.message_criteria.snmp_trap_types	string	query	False	Filter by rules.message_criteria.snmp_trap_types
rules.type	string	query	False	Filter by rules.type
rules.parameter_criteria.name_pattern	string	query	False	Filter by rules.parameter_criteria.name_pattern • Introduced in: 9.13
rules.parameter_criteria.value_pattern	string	query	False	Filter by rules.parameter_criteria.value_pattern • Introduced in: 9.13
rules.index	integer	query	False	Filter by rules.index
access_control_role.name	string	query	False	Filter by access_control_role.name • Introduced in: 9.13

Name	Type	In	Required	Description
name	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_control_role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "name": "wafl-critical-events",
      "rules": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "index": 1,
          "message_criteria": {
            "_links": {
              "related": {
                "href": "/api/resourcelink"
              }
            },
            "name_pattern": "wafl.*",
            "severities": "emergency,alert,error",
            "snmp_trap_types": "standard,built_in"
          },
```

```
          "parameter_criteria": [
            {
              "name_pattern": "vol",
              "value_pattern": "cloud*"
            }
          ],
          "type": "include"
        }
      ],
      "system_defined": 1
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

access_control_role

Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
_links	_links	
name	string	Role name

_links

Name	Type	Description
related	href	

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
_links	_links	
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.

Name	Type	Description
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

rules

Rule for an event filter

Name	Type	Description
_links	_links	
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

records

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
name	string	Filter name
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an event filter

POST `/support/ems/filters`

Introduced In: 9.6

Creates an event filter.

Required properties

- `name` - String that uniquely identifies the filter.

Recommended optional properties

- `rules` - List of criteria which is used to match a filter with an event.

Related ONTAP commands

- `event filter create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
name	string	Filter name
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

Example request

```
{
  "access_control_role": {
    "name": "admin"
  },
  "name": "wafl-critical-events",
  "rules": [
    {
      "index": 1,
      "message_criteria": {
        "name_pattern": "wafl.*",
        "severities": "emergency,alert,error",
        "snmp_trap_types": "standard,built_in"
      },
      "parameter_criteria": [
        {
          "name_pattern": "vol",
          "value_pattern": "cloud*"
        }
      ],
      "type": "include"
    }
  ],
  "system_defined": 1
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "access_control_role": {
        "name": "admin"
      },
      "name": "wafl-critical-events",
      "rules": [
        {
          "index": 1,
          "message_criteria": {
            "name_pattern": "wafl.*",
            "severities": "emergency,alert,error",
            "snmp_trap_types": "standard,built_in"
          },
          "parameter_criteria": [
            {
              "name_pattern": "vol",
              "value_pattern": "cloud*"
            }
          ],
          "type": "include"
        }
      ],
      "system_defined": 1
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983088	The filter name provided is empty
983089	The filter name provided cannot contain spaces
983092	The index of the rule provided is outside the allowed range for the filter provided
983094	The filter name provided is invalid. The filter name must contain between 2 and 64 characters and start and end with an alphanumeric symbol or (underscore). The allowed special characters are (underscore) and -(hyphen)
983095	The rule index provided is invalid for the filter provided
983101	No event is matched by the rule provided
983113	Default filters cannot be modified or removed
983114	The maximum number of filters is reached
983115	The maximum number of filter rules is reached
983126	A rule requires at least one name_pattern, severities, snmp_trap_types, or parameter pattern to be defined
983127	A property cannot contain a combination of the wildcard character and other values
983128	An invalid value is provided for the property 'snmp_trap_types'
983146	An invalid value is provided for the property 'severities'
983147	The severities provided are not supported
983155	The provided severities property does not match that of the name_pattern
983156	The provided snmp_trap_types property does not match that of the name_pattern
983157	The provided severities and snmp_trap_types properties do not match those of the name_pattern
983158	The name_pattern provided does not exist
983195	Empty field in parameter_criteria. Both name and value patterns must be specified
983196	name_pattern and value_pattern fields in parameter_criteria are empty
983211	Parameter criteria based filtering is not supported in this version of ONTAP
983216	The provided parameter criteria does not match that of the message name

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
name	string	Role name

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

rules

Rule for an event filter

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

ems_filter

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
name	string	Filter name
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

records

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
name	string	Filter name
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage event filters

Support EMS filters name endpoint overview

Overview

Manages a specific filter instance.
See the documentation for /support/ems/filters for details on the various properties.

Examples

Retrieving a specific filter instance

```
# The API:
GET /api/support/ems/filters/{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/filters/aggregate-events"
-H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"name": "aggregate-events",
"rules": [
  {
    "index": 1,
    "type": "include",
    "message_criteria": {
      "name_pattern": "*",
      "severities": "emergency,alert,error,notice",
      "snmp_trap_types": "*",
      "_links": {
        "related": {
          "href":
"/api/support/ems/messages?name=*&severity=emergency,alert,error,notice&sn
mp_trap_type=*"
        }
      }
    },
    "parameter_criteria": [
      {
        "name_pattern": "type",
        "value_pattern": "aggregate"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/aggregate-events/rules/1"
      }
    }
  },
  {
```

```
    "index": 2,
    "type": "exclude",
    "message_criteria": {
      "name_pattern": "*",
      "severities": "*",
      "snmp_trap_types": "*",
      "_links": {
        "related": {
          "href":
"/api/support/ems/messages?name=*&severity=*&snmp_trap_type=*"
        }
      }
    },
    "parameter_criteria": [
      {
        "name_pattern": "*",
        "value_pattern": "*"
      }
    ],
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/aggregate-events/rules/2"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/support/ems/filters/aggregate-events"
  }
}
}
```


Updating an existing filter with a new rule

```
# The API:
PATCH /api/support/ems/filters/{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/ems/filters/test-filter" -H
"accept: application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_filters_patch.txt"
test_ems_filters_patch.txt(body):
{
"rules": [
  {
    "type": "include",
    "message_criteria": {
      "name_pattern": "wafl.*",
      "severities": "error"
    }
  }
]
}

# The response:
200 OK
```

Deleting an existing filter

```
# The API:
DELETE /api/support/ems/filters/{name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/ems/filters/test-filter" -H
"accept: application/hal+json"

# The response:
200 OK
```

Delete an event filter

DELETE `/support/ems/filters/{name}`

Introduced In: 9.6

Deletes an event filter.

Related ONTAP commands

- `event filter delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983113	Default filters cannot be modified or removed
983124	Filter is being referenced by a destination
983204	Filter is being used for role-based operations

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an event filter

GET `/support/ems/filters/{name}`

Introduced In: 9.6

Retrieves an event filter.

Related ONTAP commands

- `event filter show`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
name	string	Filter name
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_control_role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "name": "wafl-critical-events",
  "rules": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "index": 1,
      "message_criteria": {
        "_links": {
          "related": {
            "href": "/api/resourcelink"
          }
        },
        "name_pattern": "wafl.*",
        "severities": "emergency,alert,error",
        "snmp_trap_types": "standard,built_in"
      },
      "parameter_criteria": [
        {
          "name_pattern": "vol",
          "value_pattern": "cloud*"
        }
      ],
      "type": "include"
    }
  ],
  "system_defined": 1
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

access_control_role

Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
_links	_links	
name	string	Role name

_links

Name	Type	Description
related	href	

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
_links	_links	
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

rules

Rule for an event filter

Name	Type	Description
_links	_links	
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an event filter

PATCH `/support/ems/filters/{name}`

Introduced In: 9.6

Updates an event filter.

Recommended optional properties

- `new_name` - New string that uniquely identifies a filter.
- `rules` - New list of criteria used to match the filter with an event. The existing list is discarded.

Related ONTAP commands

- `event filter rename`
- `event filter rule add`
- `event filter rule delete`
- `event filter rule reorder`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name
new_name	string	query	False	New filter name for renames. Valid in PATCH.

Request Body

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

Example request

```
{
  "access_control_role": {
    "name": "admin"
  },
  "rules": [
    {
      "index": 1,
      "message_criteria": {
        "name_pattern": "wafl.*",
        "severities": "emergency,alert,error",
        "snmp_trap_types": "standard,built_in"
      },
      "parameter_criteria": [
        {
          "name_pattern": "vol",
          "value_pattern": "cloud*"
        }
      ],
      "type": "include"
    }
  ],
  "system_defined": 1
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983088	The filter name provided is empty
983089	The filter name provided cannot contain spaces
983092	The index of the rule provided is outside the allowed range for the filter provided
983094	The filter name provided is invalid. The filter name must contain between 2 and 64 characters and start and end with an alphanumeric symbol or (underscore). The allowed special characters are (underscore) and -(hyphen)
983095	The rule index provided is invalid for the filter provided
983101	No event is matched by the rule provided
983113	Default filters cannot be modified or removed
983114	The maximum number of filters is reached
983115	The maximum number of filter rules is reached
983126	A rule requires at least one name_pattern, severities, snmp_trap_types, or parameter pattern to be defined
983127	A property cannot contain a combination of the wildcard characters and other values
983128	An invalid value is provided for the property 'snmp_trap_types'
983146	An invalid value is provided for the property 'severities'
983147	The severities provided are not supported
983155	The provided severities property does not match that of the name_pattern
983156	The provided snmp_trap_types property does not match that of the name_pattern
983157	The provided severities and snmp_trap_types properties do not match those of the name_pattern
983158	The name_pattern provided does not exist
983195	Empty field in parameter_criteria. Both name and value patterns must be specified
983196	name_pattern and value_pattern fields in parameter_criteria are empty

Error Code	Description
983211	Parameter criteria based filtering is not supported in this version of ONTAP

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.

Name	Type	Description
name	string	Role name

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

rules

Rule for an event filter

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

ems_filter

Name	Type	Description
access_control_role	access_control_role	Indicates the access control role that created the event filter and is used to control access to the filter based on role-based access control (RBAC) rules. If created by the 'admin' user, the field is unset.
rules	array[rules]	Array of event filter rules on which to match.
system_defined	boolean	Flag indicating system-defined filters.

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create or retrieve filter rules

Support EMS filters name rules endpoint overview

Overview

Manages the list of rules associated with a specific filter. A filter contains a list of rules that are evaluated to determine whether an event matches the filter. When a rule matches an event, the filter is considered a match. See the documentation for /support/ems/filters for details on the various properties in a rule.

Examples

Retrieving the collection of rules connected to a filter

```
# The API:
GET /api/support/ems/filters/{name}/rules

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/filters/no-info-debug-
events/rules" -H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "index": 1,
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/no-info-debug-events/rules/1"
      }
    }
  },
  {
    "index": 2,
    "_links": {
      "self": {
        "href": "/api/support/ems/filters/no-info-debug-events/rules/2"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/support/ems/filters/no-info-debug-events/rules"
  }
}
}
```

Creating a new rule under an existing filter

The absence of a position index appends the rule to the end of the list.

```
# The API:
POST /api/support/ems/filters/{name}/rules

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/filters/test-filter/rules"
-H "accept: application/hal+json" -H "Content-Type: application/json" -d
"@test_ems_filter_rules_post.txt"
test_ems_filter_rules_post.txt(body):

# JSON Body
{
"type": "include",
"message_criteria": {
  "name_pattern": "wafl.*",
  "severities": "error,informational"
}
}

# The response:
201 Created
```

Retrieve event filter rules

GET `/support/ems/filters/{name}/rules`

Introduced In: 9.6

Retrieves event filter rules.

Related ONTAP commands

- `event filter show`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter Name
message_criteria.name_pattern	string	query	False	Filter by message_criteria.name_pattern
message_criteria.severities	string	query	False	Filter by message_criteria.severities

Name	Type	In	Required	Description
message_criteria.snmp_trap_types	string	query	False	Filter by message_criteria.snmp_trap_types
type	string	query	False	Filter by type
parameter_criteria.name_pattern	string	query	False	Filter by parameter_criteria.name_pattern • Introduced in: 9.13
parameter_criteria.value_pattern	string	query	False	Filter by parameter_criteria.value_pattern • Introduced in: 9.13
index	integer	query	False	Filter by index
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "index": 1,
      "message_criteria": {
        "_links": {
          "related": {
            "href": "/api/resourcelink"
          }
        },
        "name_pattern": "wafl.*",
        "severities": "emergency,alert,error",
        "snmp_trap_types": "standard,built_in"
      },
      "parameter_criteria": [
        {
          "name_pattern": "vol",
          "value_pattern": "cloud*"
        }
      ],
      "type": "include"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

_links

Name	Type	Description
related	href	

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
_links	_links	
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

records

Rule for an event filter

Name	Type	Description
_links	_links	
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an event filter rule

POST `/support/ems/filters/{name}/rules`

Introduced In: 9.6

Creates an event filter rule.

Required properties

- `type` - Enumeration indicating whether the rule is for include or exclude.
- `message_criteria` - Message criteria used by a rule to match an event.
- `parameter_criteria` - Parameter criteria used by a rule to match an event. Note: At least one pattern needs to be provided for message_criteria and / or parameter_criteria.

Recommended optional properties

- `index` - One-based position index of the new rule.

Related ONTAP commands

- `event filter rule add`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

Example request

```
{
  "index": 1,
  "message_criteria": {
    "name_pattern": "wafl.*",
    "severities": "emergency,alert,error",
    "snmp_trap_types": "standard,built_in"
  },
  "parameter_criteria": [
    {
      "name_pattern": "vol",
      "value_pattern": "cloud*"
    }
  ],
  "type": "include"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "num_records": 1,
  "records": [
    {
      "index": 1,
      "message_criteria": {
        "name_pattern": "wafl.*",
        "severities": "emergency,alert,error",
        "snmp_trap_types": "standard,built_in"
      },
      "parameter_criteria": [
        {
          "name_pattern": "vol",
          "value_pattern": "cloud*"
        }
      ],
      "type": "include"
    }
  ]
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983092	The index of the rule provided is outside the allowed range for the filter provided
983095	The rule index provided is invalid for the filter provided
983113	Default filters cannot be modified or removed
983115	The maximum number of filter rules is reached
983126	A rule requires at least one name_pattern, severities, snmp_trap_types, or parameter pattern to be defined
983127	A property cannot contain a combination of the wildcard characters and other values
983128	An invalid value is provided for the property 'snmp_trap_types'
983146	An invalid value is provided for the property 'severities'
983147	The severities provided are not supported
983155	The provided severities property does not match that of the name_pattern
983156	The provided snmp_trap_types property does not match that of the name_pattern
983157	The provided severities and snmp_trap_types properties do not match those of the name_pattern
983158	The name_pattern provided does not exist
983195	Empty field in parameter_criteria. Both name and value patterns must be specified
983196	name_pattern and value_pattern fields in parameter_criteria are empty
983211	Parameter criteria based filtering is not supported in this version of ONTAP

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

ems_filter_rule

Rule for an event filter

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.

Name	Type	Description
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

records

Rule for an event filter

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage event filter rules

Support EMS filters name rules index endpoint overview

Overview

Manages a specific instance of a rule within a filter.
See the documentation for /support/ems/filters for details on the various properties in a rule.

Examples

Retrieving a single instance of a rule

```
# The API:
GET /api/support/ems/filters/{name}/rules/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/filters/no-info-debug-
events/rules/1" -H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"name": "no-info-debug-events",
"index": 1,
"type": "include",
"message_criteria": {
  "name_pattern": "*",
  "severities": "emergency,alert,error,notice",
  "snmp_trap_types": "*",
  "_links": {
    "self": {
      "href":
"/api/support/ems/messages?name=*&severity=emergency,alert,error,notice&sn
mp_trap_type=*"
    }
  }
},
"parameter_criteria": [
  {
    "name_pattern": "*",
    "value_pattern": "*"
  }
],
"_links": {
  "self": {
    "href": "/api/support/ems/filters/no-info-debug-events/rules/1"
  }
}
}
```

Updating an existing rule to use severity emergency

```
# The API:
PATCH /api/support/ems/filters/{name}/rules/{index}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/ems/filters/test-
filter/rules/1" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "@test_ems_filter_rules_patch.txt"
test_ems_filter_rules_patch.txt(body):
{
"message_criteria": {
  "severities": "emergency"
}
}

# The response:
200 OK
```

Deleting a rule from an existing filter

```
# The API:
DELETE /api/support/ems/filters/{name}/rules/{index}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/ems/filters/test-
filter/rules/1" -H "accept: application/hal+json"

# The response:
200 OK
```

Delete an event filter rule

DELETE `/support/ems/filters/{name}/rules/{index}`

Introduced In: 9.6

Deletes an event filter rule.

Related ONTAP commands

- `event filter rule delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name

Name	Type	In	Required	Description
index	string	path	True	Filter rule index

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983091	A default rule cannot be removed
983092	The index of the rule provided is outside the allowed range for the filter provided
983095	The rule index provided is invalid for the filter provided
983110	There are no user defined rules in the filter provided
983113	Default filters cannot be modified or removed

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an event filter rule

GET `/support/ems/filters/{name}/rules/{index}`

Introduced In: 9.6

Retrieves an event filter rule.

Related ONTAP commands

- `event filter show`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name
index	string	path	True	Filter rule index
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "index": 1,
  "message_criteria": {
    "_links": {
      "related": {
        "href": "/api/resourcelink"
      }
    },
    "name_pattern": "wafl.*",
    "severities": "emergency,alert,error",
    "snmp_trap_types": "standard,built_in"
  },
  "parameter_criteria": [
    {
      "name_pattern": "vol",
      "value_pattern": "cloud*"
    }
  ],
  "type": "include"
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

_links

Name	Type	Description
related	href	

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
_links	_links	
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an event filter rule

PATCH `/support/ems/filters/{name}/rules/{index}`

Introduced In: 9.6

Updates an event filter rule.

Recommended optional properties

- `message_criteria` - Message criteria used by a rule to match an event.
- `parameter_criteria` - Parameter criteria used by a rule to match an event.

Related ONTAP commands

- `event filter rule add`
- `event filter rule delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Filter name
index	string	path	True	Filter rule index

Name	Type	In	Required	Description
new_index	integer	query	False	New position for the filter rule index

Request Body

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

Example request

```
{
  "index": 1,
  "message_criteria": {
    "name_pattern": "wafl.*",
    "severities": "emergency,alert,error",
    "snmp_trap_types": "standard,built_in"
  },
  "parameter_criteria": [
    {
      "name_pattern": "vol",
      "value_pattern": "cloud*"
    }
  ],
  "type": "include"
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983092	The index of the rule provided is outside the allowed range for the filter provided
983095	The rule index provided is invalid for the filter provided
983113	Default filters cannot be modified or removed
983126	A rule requires at least one name_pattern, severities, snmp_trap_types, or parameter pattern to be defined
983127	A property cannot contain a combination of the wildcard characters and other values.
983128	An invalid value is provided for the property 'snmp_trap_types'
983146	An invalid value is provided for the property 'severities'

Error Code	Description
983147	The severities provided are not supported
983155	The provided severities property does not match that of the name_pattern
983156	The provided snmp_trap_types property does not match that of the name_pattern
983157	The provided severities and snmp_trap_types properties do not match those of the name_pattern
983158	The name_pattern provided does not exist
983195	Empty field in parameter_criteria. Both name and value patterns must be specified
983196	name_pattern and value_pattern fields in parameter_criteria are empty
983211	Parameter criteria based filtering is not supported in this version of ONTAP

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

message_criteria

Matching message definitions for the filter. A property must be specified.

Name	Type	Description
name_pattern	string	Message name filter on which to match. Supports wildcards. Defaults to * if not specified.
severities	string	A comma-separated list of severities or a wildcard.
snmp_trap_types	string	A comma separated list of snmp_trap_types or a wildcard.

parameter_criteria

Criterion used for parameter based filtering

Name	Type	Description
name_pattern	string	Parameter name pattern. Wildcard character '*' is supported.
value_pattern	string	Parameter value pattern. Wildcard character '*' is supported.

ems_filter_rule

Rule for an event filter

Name	Type	Description
index	integer	Rule index. Rules are evaluated in ascending order. If a rule's index order is not specified during creation, the rule is appended to the end of the list.

Name	Type	Description
message_criteria	message_criteria	Matching message definitions for the filter. A property must be specified.
parameter_criteria	array[parameter_criteria]	Parameter criteria used to match against events' parameters. Each parameter consists of a name and a value. When multiple parameter criteria are provided in a rule, all must match for the rule to be considered matched. A pattern can include one or more wildcard '*' characters.
type	string	Rule type

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage the EMS event catalog

Support EMS messages endpoint overview

Overview

Allows access to the EMS event catalog. The catalog contains a list of all events supported by the system and their corresponding descriptions, the reason for an event occurrence, and how to correct issues related to the event.

Example

Querying for the first event that has a message name beginning with 'C'

```
# The API:
GET /api/support/ems/messages

# The call:
curl -X GET "https://<mgmt-
ip>/api/support/ems/messages?fields=name&max_records=1&name=C*" -H
"accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "name": "CR.Data.File.Inaccessible",
    "_links": {
      "self": {
        "href": "/api/support/ems/messages/CR.Data.File.Inaccessible"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/ems/messages?fields=name&max_records=1&name=C*"
  },
}
}
```

Retrieve event catalog definitions

GET `/support/ems/messages`

Introduced In: 9.6

Retrieves the event catalog definitions.

Related ONTAP commands

- `event catalog show`

Parameters

Name	Type	In	Required	Description
corrective_action	string	query	False	Filter by corrective_action
snmp_trap_type	string	query	False	Filter by snmp_trap_type
name	string	query	False	Filter by name
deprecated	boolean	query	False	Filter by deprecated
severity	string	query	False	Filter by severity
description	string	query	False	Filter by description
filter.name	string	query	False	The filter name that applies to the query. • Introduced in: 9.14
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "corrective_action": "string",
      "deprecated": 1,
      "description": "string",
      "name": "callhome.spares.low",
      "severity": "error",
      "snmp_trap_type": "standard"
    }
  ]
}
```


Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983093	The provided filter is unknown.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

records

Name	Type	Description
_links	_links	
corrective_action	string	Corrective action
deprecated	boolean	Is deprecated?
description	string	Description of the event.
name	string	Name of the event.
severity	string	Severity
snmp_trap_type	string	SNMP trap type

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

View and create EMS role-based configurations

Support EMS role-configs endpoint overview

Overview

Manages the list of access control roles that have limited access to the EMS events and configurations. Access to the EMS events and configurations are controlled by the EMS role-based configuration, which has the following two properties:

- `event_filter`
- `limit_access_to_global_configs`

Role-based event filter

A role-based event filter is a filter assigned to an access control role that limits what events users of that role have access to. It is applied transparently when a user of that role performs GET requests on the following endpoints:

- `/support/ems/events`
- `/support/ems/messages`

##
It is also applied when events are forwarded as notifications to destinations created by users of that role. To those destinations, only events that match the role-based filter in addition to the filters configured on the destinations are forwarded.

Limiting access to the global EMS configurations

The APIs at the `/api/support/ems` endpoint expose several configuration properties that affect how EMS handles events. The following properties are always accessible by all roles that have access to the `/api/support/ems` APIs.

- `mail_from`
- `mail_server`
- `mail_server_user`

- `mail_server_password`
- `proxy_url`
- `proxy_user`
- `proxy_password`

##
Access to the following property by an access control role can be restricted:

- `pubsub_enabled`

##
Limiting access to EMS events and configurations is typically applied for an access control role that is designed to have limited administrative capabilities. For example, when the cluster is physically managed by a service provider and the services are managed by the customer.

Examples

Retrieving the list of EMS role-based configurations

```
# The API:
GET /api/support/ems/role-configs

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/role-configs" -H "accept:
application/hal+json"

# The response:
200 OK

# JSON Body
{
"records": [
  {
    "access_control_role": {
      "name": "storage-admin",
      "_links": {
        "self": {
          "href": "/api/security/roles/0b2580c8-de36-4213-bfca-
88cdaaaf3ae6/storage-admin"
        }
      }
    },
    "event_filter": {
      "name": "storage-admin-events",
      "_links": {
        "self": {
          "href": "/api/support/ems/filters/storage-admin-events"
```

```
        }
      }
    },
    "limit_access_to_global_configs": true,
    "_links": {
      "self": {
        "href": "/api/support/ems/role-configs/storage-admin"
      }
    }
  },
  {
    "access_control_role": {
      "name": "network-admin",
      "_links": {
        "self": {
          "href": "/api/security/roles/0b2580c8-de36-4213-bfca-
88cdaaaf3ae6/network-admin"
        }
      }
    },
    "filter_filter": {
      "name": "network-admin-events",
      "_links": {
        "self": {
          "href": "/api/support/ems/filters/network-admin-events"
        }
      }
    },
    "limit_access_to_global_configs": true,
    "_links": {
      "self": {
        "href": "/api/support/ems/role-configs/network-admin"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/support/ems/role-configs"
  }
}
}
```

Creating an EMS role-based configuration for an access control role

```
# The API:
POST /api/support/ems/role-configs

# The call:
curl -X POST "https://<mgmt-ip>/api/support/ems/role-configs" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d
"@role_configs_post.txt"
role_configs_post.txt(body):
{
"access_control_role": {
  "name": "storage-admin"
},
"event_filter": {
  "name": "storage-admin-events"
},
"limit_access_to_global_configs": true
}

# The response:
201 Created
```

Retrieve EMS role-based configurations

GET `/support/ems/role-configs`

Introduced In: 9.13

Retrieves a collection of the EMS role-based configurations.

Related ONTAP commands

- `event role-config show`

Parameters

Name	Type	In	Required	Description
access_control_role.name	string	query	False	Filter by access_control_role.name
event_filter.name	string	query	False	Filter by event_filter.name

Name	Type	In	Required	Description
limit_access_to_global_configs	boolean	query	False	Filter by limit_access_to_global_configs
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_control_role": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "admin"
      },
      "event_filter": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "important-events"
      }
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

access_control_role

Access control role that the event filter is assigned to.

Name	Type	Description
_links	_links	
name	string	Role name

event_filter

Event filter that is assigned to the access control role.

Name	Type	Description
_links	_links	
name	string	

records

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Access control role that the event filter is assigned to.
event_filter	event_filter	Event filter that is assigned to the access control role.

Name	Type	Description
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create an EMS role-based configuration for an access control role

POST `/support/ems/role-configs`

Introduced In: 9.13

Creates an EMS role-based configuration for an access control role.

Required properties

- `access_control_role` - Uniquely identifies the access control role.

Recommended optional properties

- `event_filter` - Identifies the event filter.
- `limit_access_to_global_configs` - Indicates whether the access control role has limited access to global EMS configurations.

Related ONTAP commands

- `event role-config create`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_control_role	access_control_role	Access control role that the event filter is assigned to.
event_filter	event_filter	Event filter that is assigned to the access control role.
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

Example request

```
{
  "access_control_role": {
    "name": "admin"
  },
  "event_filter": {
    "name": "important-events"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records
records	array[records]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "access_control_role": {
        "name": "admin"
      },
      "event_filter": {
        "name": "important-events"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983198	The event filter provided does not exist.
983199	The access control role provided does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Access control role that the event filter is assigned to.

Name	Type	Description
name	string	Role name

event_filter

Event filter that is assigned to the access control role.

Name	Type	Description
name	string	

ems_role_config

Name	Type	Description
access_control_role	access_control_role	Access control role that the event filter is assigned to.
event_filter	event_filter	Event filter that is assigned to the access control role.
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

records

Name	Type	Description
access_control_role	access_control_role	Access control role that the event filter is assigned to.
event_filter	event_filter	Event filter that is assigned to the access control role.

Name	Type	Description
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage EMS role-based configurations

Support EMS role-configs access_control_role.name endpoint overview

Overview

Manages the EMS role-based configuration of a specific access control role.

##
See the documentation for /support/ems/role-configs for details on the various properties.

Examples

Retrieving the EMS role-based configuration of an access control role

```
# The API:
GET /api/support/ems/role-configs/{access_control_role.name}

# The call:
curl -X GET "https://<mgmt-ip>/api/support/ems/role-configs/storage-admin"
-H "accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
"access_control_role": {
  "name": "storage-admin",
  "_links": {
    "self": {
      "href": "/api/security/roles/0b2580c8-de36-4213-bfca-
88cdaaaf3ae6/storage-admin"
    }
  }
},
"event_filter": {
  "name": "storage-admin-events",
  "_links": {
    "self": {
      "href": "/api/support/ems/filters/storage-admin-events"
    }
  },
  "limit_access_to_global_configs": true
},
"_links": {
  "self": {
    "href": "/api/support/ems/role-configs/storage-admin"
  }
}
}
```

Updating the EMS role-based configuration of an access control role

```
# The API:
PATCH /api/support/ems/event-configs/{access_control_role.name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/support/ems/role-configs/storage-
admin" -H "accept: application/hal+json" -H "Content-Type:
application/json" -d "@role_configs_patch.txt"
role_configs_patch.txt(body):
{
"event_filter": {
  "name": "new-storage-admin-events"
},
"limit_access_to_global_configs": false
}

# The response:
200 OK
```

Removing the EMS role-based configuration of an access control role

```
# The API:
DELETE /api/support/ems/role-configs/{access_control_role.name}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/support/ems/role-configs/storage-
admin" -H "accept: application/hal+json"

# The response:
200 OK
```

Remove the EMS role-based configuration for an access control role

DELETE `/support/ems/role-configs/{access_control_role.name}`

Introduced In: 9.13

Removes the EMS role-based configuration of the access control role.

Related ONTAP commands

- `event role-config delete`

Parameters

Name	Type	In	Required	Description
access_control_role.name	string	path	True	Access control role name

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve the EMS role-based configuration for an access control role

GET `/support/ems/role-configs/{access_control_role.name}`

Introduced In: 9.13

Retrieves the EMS role-based configuration of the access control role.

Related ONTAP commands

- `event role-config show`

Parameters

Name	Type	In	Required	Description
access_control_role.name	string	path	True	Access control role name
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
access_control_role	access_control_role	Access control role that the event filter is assigned to.
event_filter	event_filter	Event filter that is assigned to the access control role.
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_control_role": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "admin"
  },
  "event_filter": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "important-events"
  }
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

access_control_role

Access control role that the event filter is assigned to.

Name	Type	Description
_links	_links	
name	string	Role name

event_filter

Event filter that is assigned to the access control role.

Name	Type	Description
_links	_links	
name	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Update the EMS role-based configuration for an access control role

PATCH `/support/ems/role-configs/{access_control_role.name}`

Introduced In: 9.13

Updates the EMS role-based configuration of the access control role.

Recommended optional properties

- `event_filter` - Identifies the event filter.
- `limit_access_to_global_configs` - Indicates whether the access control role has limited access to global EMS configurations.

Related ONTAP commands

- `event role-config modify`

Parameters

Name	Type	In	Required	Description
access_control_role.name	string	path	True	Access control role name

Request Body

Name	Type	Description
event_filter	event_filter	Event filter that is assigned to the access control role.
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

Example request

```
{
  "event_filter": {
    "name": "important-events"
  }
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
983197	The event filter provided is the same as the currently assigned filter.
983198	The event filter provided does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_control_role

Access control role that the event filter is assigned to.

Name	Type	Description
name	string	Role name

event_filter

Event filter that is assigned to the access control role.

Name	Type	Description
name	string	

ems_role_config

Name	Type	Description
event_filter	event_filter	Event filter that is assigned to the access control role.
limit_access_to_global_configs	boolean	Indicates whether the access control has limited access to global EMS configurations.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

Name	Type	Description
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage cluster-wide SNMP configuration

Support SNMP endpoint overview

Overview

Cluster wide SNMP configuration. You can configure or retrieve the following SNMP parameters using this endpoint:

- enable or disable SNMP
- enable or disable SNMP authentication traps
- enable or disable SNMP traps

##
This endpoint can also be used to trigger an SNMP test trap.

Examples

Disables SNMP protocol in the cluster.

```
# The API:
PATCH "/api/support/snmp"

# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d '{"enabled":"false"}'

# The response
200 OK
{}
```

Enables SNMP authentication traps in the cluster.

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d
'{"auth_traps_enabled":"true"}'

# The response
200 OK
{}
```

Enables SNMP protocol and SNMP authentication traps in the cluster.

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d '{"enabled":"true",
"auth_traps_enabled":"true"}'

# The response
200 OK
{}
```

Disables the SNMP trap subsystem in the cluster. Once the SNMP trap subsystem is disabled, the cluster stops sending SNMP traps.

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d '{"traps_enabled":"false"}'

# The response
200 OK
{}
```

Sets the contact and location for the SNMP server

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d
'{"contact":"support@company.com", "location":"Building 1"}'

#The response
200 OK
{}
```

Triggers an SNMP test trap.

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d
'{"trigger_test_trap":"true"}'

#The response
200 OK
{}
```

Enables the SNMP protocol in the cluster, SNMP traps, and triggers an SNMP test trap.

```
# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-ip>/api/support/snmp" -d '{"enabled":"true",
"traps_enabled":"true", "trigger_test_trap":"true"}'

# The response
200 OK
{}
```

Retrieve the cluster-wide SNMP configuration

GET `/support/snmp`

Introduced In: 9.7

Retrieves the cluster wide SNMP configuration.

Related ONTAP commands

- `options snmp.enable`
- `system snmp show`

Learn more

- DOC /support/snmp

Parameters

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	self_link	
auth_traps_enabled	boolean	Specifies whether to enable or disable SNMP authentication traps.
contact	string	Specifies the contact person for the SNMP server

Name	Type	Description
enabled	boolean	Specifies whether to enable or disable SNMP.
location	string	Specifies the location of the SNMP server
traps_enabled	boolean	Specifies whether to enable or disable SNMP traps.
trigger_test_trap	boolean	Trigger a test SNMP trap.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "auth_traps_enabled": 1,
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "enabled": 1,
  "location": "Building 1",
  "traps_enabled": 1,
  "trigger_test_trap": 1
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the cluster-wide SNMP configuration

PATCH `/support/snmp`

Introduced In: 9.7

Updates the cluster wide SNMP configuration, such as:

- enabling or disabling SNMP
- enabling or disabling SNMP traps
- enabling or disabling authentication traps
- setting the contact and location information for the SNMP server
- triggering an SNMP test trap

Related ONTAP commands

- `options snmp.enable`
- `system snmp authtrap`
- `system snmp init`

Learn more

- DOC /support/snmp

Request Body

Name	Type	Description
auth_traps_enabled	boolean	Specifies whether to enable or disable SNMP authentication traps.
contact	string	Specifies the contact person for the SNMP server
enabled	boolean	Specifies whether to enable or disable SNMP.
location	string	Specifies the location of the SNMP server
traps_enabled	boolean	Specifies whether to enable or disable SNMP traps.
trigger_test_trap	boolean	Trigger a test SNMP trap.

Example request

```
{
  "auth_traps_enabled": 1,
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "enabled": 1,
  "location": "Building 1",
  "traps_enabled": 1,
  "trigger_test_trap": 1
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
1179738	Cluster identification not available for modification since a cluster has not been created.
1179739	Cluster identification modification is not available in maintenance mode or other boot modes.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

snmp

Cluster-wide SNMP configuration.

Name	Type	Description
auth_traps_enabled	boolean	Specifies whether to enable or disable SNMP authentication traps.
contact	string	Specifies the contact person for the SNMP server
enabled	boolean	Specifies whether to enable or disable SNMP.
location	string	Specifies the location of the SNMP server
traps_enabled	boolean	Specifies whether to enable or disable SNMP traps.
trigger_test_trap	boolean	Trigger a test SNMP trap.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

Name	Type	Description
message	string	Error message
target	string	The target parameter that caused the error.

Create or retrieve SNMP traphosts

Support SNMP traphosts endpoint overview

Overview

This SNMP endpoint is used to retrieve, configure and reconfigure SNMP traphosts. An SNMP traphost is a host machine that is configured to receive SNMP traps from ONTAP. An SNMP traphost can be an SNMPv1/SNMPv2c traphost or an SNMPv3 traphost. ONTAP sends SNMPv1/SNMPv2c traps to an SNMPv1/SNMPv2c traphost over the SNMPv1/SNMPv2c protocol. Similarly, it sends SNMPv3 traps to an SNMPv3 traphost over the SNMPv3 protocol.

Examples

Retrieves a list of SNMP traphosts in the cluster, sorted by IP address

```
# The API:
GET "/api/support/snmp/traphosts"

# The call:
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/support/snmp/traphosts?order_by=ip_address"

# The response:
{
"records": [
  {
    "host": "example_host_name",
    "ip_address": "12.34.56.78",
    "_links": {
      "self": {
        "href": "/api/support/snmp/traphosts/example_host_name"
      }
    }
  },
  {
    "host": "example_host_name2",
    "ip_address": "12.34.56.90",
    "_links": {
      "self": {
        "href": "/api/support/snmp/traphosts/example_host_name2"
      }
    }
  },
  {
    "host": "example_host_name3",
    "ip_address": "12.34.56.91",
    "_links": {
      "self": {
        "href": "/api/support/snmp/traphosts/example_host_name3"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/support/snmp/traphosts?order_by=ip_address"
  }
}
}
```

Retrieves a list of SNMP traphosts in the cluster for which SNMP user is 'snmpv3user1'

```
# The call:
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/support/snmp/traphosts?name=snmpv3user1"

# The response:
{
"records": [
  {
    "host": "example_host_name",
    "user": {
      "name": "snmpv3user1",
      "_links": {
        "self": {
          "href":
"/api/support/snmp/users/800003150558b57e8dbd9ce9119d82005056a7b4e5/snmpv3
user1"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/support/snmp/traphosts/example_host_name"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/support/snmp/traphosts?user.name=snmpv3user1"
  }
}
}
```

Adds an SNMPv1 or SNMPv2c traphost

```
# The API:
POST "/api/support/snmp/traphosts"

# The call:
curl -H "accept: application/json" -H "Content-Type: application/json" -X
POST "https://<mgmt-ip>/api/support/snmp/traphosts" -d
'{"host":"10.140.128.48"}'

# The response:
201 Created
{}
```

Adds an SNMPv3 traphost

```
# The API:
POST "/api/support/snmp/traphosts"

# The call:
curl -H "accept: application/json" -H "Content-Type: application/json" -X
POST "https://<mgmt-ip>/api/support/snmp/traphosts" -d '{"host":"fd-
geoycpi-uno.gycpi.b.yahoodns.net", "user":{"name":"snmpv3user1"}}'

# The response:
201 Created
{}
```

Retrieve SNMP traphosts

GET `/support/snmp/traphosts`

Introduced In: 9.7

Retrieves the list of SNMP traphosts along with the SNMP users configured for those traphosts.

Related ONTAP commands

- `system snmp traphost show`

Learn more

- DOC /support/snmp/traphosts

Parameters

Name	Type	In	Required	Description
ip_address	string	query	False	Filter by ip_address
user.name	string	query	False	Filter by user.name
host	string	query	False	Filter by host
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[snmp_traphost]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "host": "traphost.example.com",
      "ip_address": "10.10.10.7",
      "user": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "snmpv3user3"
      }
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

user

Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	Optional SNMPv1/SNMPv2c or SNMPv3 user name. For an SNMPv3 traphost, this object refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this object refers to an SNMP community. For an SNMPv3 traphost, this object is mandatory and refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, ONTAP automatically uses "public", if the same is configured, or any other configured community as user. So, for an SNMPv1 or SNMPv2c traphost, this property should not be provided in the "POST" method. However, the configured community for the SNMPv1/SNMPv2c traphost is returned by the "GET" method. • example: snmpv3user3 • Introduced in: 9.7 • x-nullable: true

snmp_traphost

SNMP manager or host machine that receives SNMP traps from ONTAP.

Name	Type	Description
_links	_links	
host	string	Fully qualified domain name (FQDN), IPv4 address or IPv6 address of SNMP traphost.
ip_address	string	IPv4 or IPv6 address

Name	Type	Description
user	user	Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Create SNMP traphosts

POST `/support/snmp/traphosts`

Introduced In: 9.7

Creates SNMP traphosts. While adding an SNMPv3 traphost, an SNMPv3 user configured in ONTAP must be specified. ONTAP uses this user's credentials to authenticate and/or encrypt traps sent to this SNMPv3 traphost. While adding an SNMPv1/SNMPv2c traphost, SNMPv1/SNMPv2c user or community need not be specified.

Required properties

- `host` - Fully Qualified Domain Name (FQDN), IPv4 address or IPv6 address of SNMP traphost.

Recommended optional properties

- If `host` refers to an SNMPv3 traphost, the following field is required:

- `user` - SNMPv3 or User-based Security Model (USM) user.

- For an SNMPv1/SNMPv2c traphost, ONTAP automatically uses 'public' if 'public' is configured or no community is configured. Otherwise, ONTAP uses the first configured community.

Related ONTAP commands

- `system snmp traphost add`

Learn more

- DOC /support/snmp/traphosts

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
host	string	Fully qualified domain name (FQDN), IPv4 address or IPv6 address of SNMP traphost.
user	user	Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

Example request

```
{
  "host": "traphost.example.com",
  "user": {
    "name": "snmpv3user3"
  }
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
num_records	integer	Number of records.
records	array[snmp_traphost]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "host": "traphost.example.com",
      "user": {
        "name": "snmpv3user3"
      }
    }
  ]
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8847365	Unknown host.
9043969	Duplicate traphost entry.
9043980	IPv6 support is disabled.
9043991	Not a USM user.

Error Code	Description
9043993	Current cluster version does not support SNMPv3 traps.
9044001	Failed to create SNMPv1 traphost.
9044002	Failed to create SNMPv3 traphost.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

user

Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

Name	Type	Description
name	string	Optional SNMPv1/SNMPv2c or SNMPv3 user name. For an SNMPv3 traphost, this object refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this object refers to an SNMP community. For an SNMPv3 traphost, this object is mandatory and refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, ONTAP automatically uses "public", if the same is configured, or any other configured community as user. So, for an SNMPv1 or SNMPv2c traphost, this property should not be provided in the "POST" method. However, the configured community for the SNMPv1/SNMPv2c traphost is returned by the "GET" method. • example: snmpv3user3 • Introduced in: 9.7 • x-nullable: true

snmp_traphost

SNMP manager or host machine that receives SNMP traps from ONTAP.

Name	Type	Description
host	string	Fully qualified domain name (FQDN), IPv4 address or IPv6 address of SNMP traphost.
user	user	Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage individual SNMP traphosts

Support SNMP traphosts host endpoint overview

Overview

Defines, retrieves or deletes an individual SNMP traphost.

Examples

Retrieves an individual traphost in the cluster

```
# The API:
GET "/api/support/snmp/traphosts/{host}"

# The call
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/support/snmp/traphosts/10.235.36.62"

# The response
{
"host": "example_host_name",
"ip_address": "10.235.36.62",
"user": {
  "name": "public",
  "_links": {
    "self": {
      "href":
"/api/support/snmp/users/800003150558b57e8dbd9ce9119d82005056a7b4e5/public
"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/support/snmp/traphosts/10.235.36.62"
  }
}
}
```

Deletes an individual traphost in the cluster

```
# The API:
DELETE "/api/support/snmp/traphosts/{host}"

# The call:
curl -H "accept: application/json" -H "Content-Type: application/json" -X
DELETE "https://<mgmt-
ip>/api/support/snmp/traphosts/3ffe:ffff:100:f102::1"

# The response:
200 OK
{}
```

Delete an SNMP traphost

DELETE `/support/snmp/traphosts/{host}`

Introduced In: 9.7

Deletes an SNMP traphost.

Learn more

- DOC /support/snmp/traphosts/{host}

Parameters

Name	Type	In	Required	Description
host	string	path	True	Fully Qualified Domain Name (FQDN), IPv4 address or IPv6 address of SNMP traphost.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8847365	Unknown host.

Error Code	Description
9043970	Traphost entry does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SNMP traphost details

GET `/support/snmp/traphosts/{host}`

Introduced In: 9.7

Retrieves the details of an SNMP traphost along with the SNMP user configured for that traphost.

Learn more

- DOC /support/snmp/traphosts/{host}

Parameters

Name	Type	In	Required	Description
host	string	path	True	Fully Qualified Domain Name (FQDN), IPv4 address or IPv6 address of SNMP traphost.
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
host	string	Fully qualified domain name (FQDN), IPv4 address or IPv6 address of SNMP traphost.
ip_address	string	IPv4 or IPv6 address
user	user	Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "host": "traphost.example.com",
  "ip_address": "10.10.10.7",
  "user": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "snmpv3user3"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
8847365	Unknown host.
9043970	Traphost entry does not exist.

Also see the table of common errors in the Response body overview section of this documentation.

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

user

Optional SNMP user parameter. For an SNMPv3 traphost, this property refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this property refers to an SNMP community.

Name	Type	Description
_links	_links	
name	string	Optional SNMPv1/SNMPv2c or SNMPv3 user name. For an SNMPv3 traphost, this object refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, this object refers to an SNMP community. For an SNMPv3 traphost, this object is mandatory and refers to an SNMPv3 or User-based Security Model (USM) user. For an SNMPv1 or SNMPv2c traphost, ONTAP automatically uses "public", if the same is configured, or any other configured community as user. So, for an SNMPv1 or SNMPv2c traphost, this property should not be provided in the "POST" method. However, the configured community for the SNMPv1/SNMPv2c traphost is returned by the "GET" method. • example: snmpv3user3 • Introduced in: 9.7 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve and create SNMP users

Support SNMP users endpoint overview

Overview

Defines, retrieves and adds new SNMP users. An SNMP user can be an SNMPv1/SNMPv2c user or an SNMPv3 user. SNMPv1/SNMPv2c user is also called a "community" user. Use a "community" user to query ONTAP SNMP server over SNMPv1/SNMPv2c protocol. An SNMPv3 user, also called a User-based Security Model (USM) user, can be a local SNMPv3 user or a remote SNMPv3 user. Use a local SNMPv3 user to query ONTAP SNMP server over SNMPv3 and/or to send SNMPv3 traps. A remote SNMPv3 user is configured in ONTAP as well as on a remote switch. ONTAP SNMP client uses a remote SNMPv3 user to query the switch over SNMPv3.

Examples

Retrieves a list of SNMP users in the cluster, sorted by SVM UUID

```
# The API:
GET "/api/support/snmp/users"

# The call:
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/support/snmp/users?order_by=owner.uuid"

# The response:
{
```

```
"records": [
  {
    "engine_id": "80000315052d7d2c4410b8e911bc9f005056bb942e",
    "name": "snmpv1user1",
    "owner": {
      "uuid": "442c7d2d-b810-11e9-bc9f-005056bb942e"
    },
    "_links": {
      "self": {
        "href":
"/api/support/snmp/users/80000315052d7d2c4410b8e911bc9f005056bb942e/snmpv1
user1"
      }
    }
  },
  {
    "engine_id": "80000315058e02057c0fb8e911bc9f005056bb942e",
    "name": "snmpv3user1",
    "owner": {
      "uuid": "7c05028e-b80f-11e9-bc9f-005056bb942e"
    },
    "_links": {
      "self": {
        "href":
"/api/support/snmp/users/80000315058e02057c0fb8e911bc9f005056bb942e/snmpv3
user1"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/support/snmp/users?order_by=owner.uuid"
  }
}
}
```


Creates an SNMPv1 or SNMPv2c community user

```
# The API:
POST "/api/support/snmp/users"

# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
POST "https://<mgmt-ip>/api/support/snmp/users" -d
'{"owner":{"uuid":"02c9e252-41be-11e9-81d5-00a0986138f7",
"name":"cluster1"}, "name":"public", "authentication_method":"community"}'

# The response:
201 Created
{}
```

Creates a local SNMPv3 user

```
# The API:
POST "/api/support/snmp/users"

# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
POST "https://<mgmt-ip>/api/support/snmp/users" -d
'{"owner":{"uuid":"02c9e252-41be-11e9-81d5-00a0986138f7",
"name":"cluster1"}, "name":"snmpv3u1", "authentication_method":"usm",
"snmpv3":{"authentication_protocol":"sha",
"authentication_password":"jelly22fi$h", "privacy_protocol":"aes",
"privacy_password":"a11Black$"}}'

# The response:
201 Created
{}
```

Creates a remote SNMPv3 user

```
# The API:
POST "/api/support/snmp/users"

# The call
curl -H "accept: application/json" -H "Content-Type: application/json" -X
POST "https://<mgmt-ip>/api/support/snmp/users" -d
'{"owner":{"uuid":"02c9e252-41be-11e9-81d5-00a0986138f7",
"name":"cluster1"},
"engine_id":"8000031505b67667a26975e9118a480050568e6f74",
"name":"switchuser1", "authentication_method":"usm",
"switch_address":"fdf8:f53b:82e4::53",
"snmpv3":{"authentication_protocol":"md5",
"authentication_password":"TfhIeliw601lS.Rw$3pm"}}'

# The response:
201 Created
{}
```

Retrieve SNMP users on a cluster

GET `/support/snmp/users`

Introduced In: 9.7

Retrieves the list of SNMP users on the cluster.

Related ONTAP commands

- `security snmpusers`
- `security login show -application snmp`

Learn more

- DOC /support/snmp/users

Parameters

Name	Type	In	Required	Description
owner.name	string	query	False	Filter by owner.name
owner.uuid	string	query	False	Filter by owner.uuid
authentication_method	string	query	False	Filter by authentication_method

Name	Type	In	Required	Description
snmpv3.privacy_protocol	string	query	False	Filter by snmpv3.privacy_protocol
snmpv3.authentication_protocol	string	query	False	Filter by snmpv3.authentication_protocol
engine_id	string	query	False	Filter by engine_id
name	string	query	False	Filter by name • maxLength: 32
switch_address	string	query	False	Filter by switch_address
scope	string	query	False	Filter by scope
comment	string	query	False	Filter by comment • maxLength: 128 • minLength: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[snmp_user]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_method": "usm",
      "comment": "This is a comment.",
      "engine_id": "80000315055415ab26d4aae811ac4d005056bb792e",
      "name": "snmpv3user2",
      "owner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
      },
      "scope": "svm",
      "snmpv3": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "authentication_protocol": "sha2_256",
        "privacy_protocol": "aes128"
      },
      "switch_address": "10.23.34.45"
    }
  ]
}
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

owner

Optional name and UUID of owning Storage Virtual Machine (SVM).

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snmpv3

Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
_links	_links	
authentication_protocol	string	Authentication protocol.
privacy_protocol	string	Privacy protocol.

snmp_user

An SNMP user can be an SNMPv1/SNMPv2c user or an SNMPv3 user. SNMPv1/SNMPv2c user is also called a "community" user. An SNMPv3 user, also called a User-based Security Model (USM) user, can be a local SNMPv3 user or a remote SNMPv3 user. A local SNMPv3 user can be used for querying ONTAP SNMP server over SNMPv3 and/or for sending SNMPv3 traps. The local SNMPv3 user used for sending SNMPv3 traps must be configured with the same authentication and privacy credentials on the traphost receiver as well. A remote SNMPv3 user is also configured on a remote switch and used by ONTAP SNMP client functionality to query the remote switch over SNMPv3. An SNMP user is scoped to its owning Storage Virtual Machine (SVM). Owning SVM could be a data SVM or the administrative SVM.

Name	Type	Description
_links	_links	
authentication_method	string	Optional authentication method.
comment	string	Optional comment text.
engine_id	string	Optional SNMPv3 engine identifier. For a local SNMP user belonging to the administrative Storage Virtual Machine (SVM), the default value of this parameter is the SNMPv3 engine identifier for the administrative SVM. For a local SNMP user belonging to a data SVM, the default value of this parameter is the SNMPv3 engine identifier for that data SVM. For an SNMPv1/SNMPv2c community, this parameter should not be specified in "POST" method. For a remote switch SNMPv3 user, this parameter specifies the SNMPv3 engine identifier for the remote switch. This parameter can also optionally specify a custom engine identifier.
name	string	SNMP user name.
owner	owner	Optional name and UUID of owning Storage Virtual Machine (SVM).
scope	string	Set to "svm" for data Storage Virtual Machine (SVM) SNMP users and to "cluster" for administrative SVM SNMP users.

Name	Type	Description
snmpv3	snmpv3	Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.
switch_address	string	Optional remote switch address. It can be an IPv4 address or an IPv6 address. A remote switch can be queried over SNMPv3 using ONTAP SNMP client functionality. Querying such a switch requires an SNMPv3 user (remote switch user) to be configured on the switch. Since ONTAP requires remote switch user's SNMPv3 credentials (to query it), this user must be configured in ONTAP as well. This parameter is specified when configuring such a user. • example: 10.23.34.45 • Introduced in: 9.7 • readCreate: 1 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Create a cluster-scoped or an SVM-scoped SNMP user

POST `/support/snmp/users`

Introduced In: 9.7

Creates either a cluster-scoped or an SVM-scoped SNMP user. This user can be an SNMPv1 or SNMPv2c community user or an SNMPv3 user. An SNMPv3 user can be a local SNMPv3 user or a remote SNMPv3 user.

Required properties

- `name` - SNMP user name

Optional properties

- `owner` - Name and UUID of owning SVM.
- `engine_id` - Engine ID of owning SVM or remote switch.
- `authentication_method` - Authentication method
- `switch_address` - Optional remote switch address
- `snmpv3` - SNMPv3-specific credentials
- `comment` - Comment text

Default property values

- `snmpv3.authentication_protocol` - none
- `snmpv3.privacy_protocol` - none

Related ONTAP commands

- `security login create`
- `system snmp community add`

Learn more

- DOC /support/snmp/users

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
authentication_method	string	Optional authentication method.
comment	string	Optional comment text.

Name	Type	Description
engine_id	string	Optional SNMPv3 engine identifier. For a local SNMP user belonging to the administrative Storage Virtual Machine (SVM), the default value of this parameter is the SNMPv3 engine identifier for the administrative SVM. For a local SNMP user belonging to a data SVM, the default value of this parameter is the SNMPv3 engine identifier for that data SVM. For an SNMPv1/SNMPv2c community, this parameter should not be specified in "POST" method. For a remote switch SNMPv3 user, this parameter specifies the SNMPv3 engine identifier for the remote switch. This parameter can also optionally specify a custom engine identifier.
name	string	SNMP user name.
owner	owner	Optional name and UUID of owning Storage Virtual Machine (SVM).
snmpv3	snmpv3	Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
switch_address	string	Optional remote switch address. It can be an IPv4 address or an IPv6 address. A remote switch can be queried over SNMPv3 using ONTAP SNMP client functionality. Querying such a switch requires an SNMPv3 user (remote switch user) to be configured on the switch. Since ONTAP requires remote switch user's SNMPv3 credentials (to query it), this user must be configured in ONTAP as well. This parameter is specified when configuring such a user. • example: 10.23.34.45 • Introduced in: 9.7 • readCreate: 1 • x-nullable: true

Example request

```
{
  "authentication_method": "usm",
  "comment": "This is a comment.",
  "engine_id": "80000315055415ab26d4aae811ac4d005056bb792e",
  "name": "snmpv3user2",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "snmpv3": {
    "authentication_password": "humTdumt*@t0nAwa11",
    "authentication_protocol": "sha2_256",
    "privacy_password": "p@**GOandCLCt*200",
    "privacy_protocol": "aes128"
  },
  "switch_address": "10.23.34.45"
}
```

Response

```
Status: 201, Created
```

Name	Type	Description
authentication_method	string	Optional authentication method.
comment	string	Optional comment text.
engine_id	string	Optional SNMPv3 engine identifier. For a local SNMP user belonging to the administrative Storage Virtual Machine (SVM), the default value of this parameter is the SNMPv3 engine identifier for the administrative SVM. For a local SNMP user belonging to a data SVM, the default value of this parameter is the SNMPv3 engine identifier for that data SVM. For an SNMPv1/SNMPv2c community, this parameter should not be specified in "POST" method. For a remote switch SNMPv3 user, this parameter specifies the SNMPv3 engine identifier for the remote switch. This parameter can also optionally specify a custom engine identifier.
name	string	SNMP user name.
owner	owner	Optional name and UUID of owning Storage Virtual Machine (SVM).
snmpv3	snmpv3	Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
switch_address	string	Optional remote switch address. It can be an IPv4 address or an IPv6 address. A remote switch can be queried over SNMPv3 using ONTAP SNMP client functionality. Querying such a switch requires an SNMPv3 user (remote switch user) to be configured on the switch. Since ONTAP requires remote switch user's SNMPv3 credentials (to query it), this user must be configured in ONTAP as well. This parameter is specified when configuring such a user. • example: 10.23.34.45 • Introduced in: 9.7 • readCreate: 1 • x-nullable: true

Example response


```
{
  "authentication_method": "usm",
  "comment": "This is a comment.",
  "engine_id": "80000315055415ab26d4aae811ac4d005056bb792e",
  "name": "snmpv3user2",
  "owner": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "snmpv3": {
    "authentication_password": "humTdumt*@t0nAwa11",
    "authentication_protocol": "sha2_256",
    "privacy_password": "p@**GOandCLCt*200",
    "privacy_protocol": "aes128"
  },
  "switch_address": "10.23.34.45"
}
```


Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621475	This operation is not allowed on a node SVM.
2621601	This operation is not permitted on a system SVM.
5636101	One role for all applications and authentication methods is recommended for a user account.
5636106	Engine ID starting with first bit set as 1 in first octet should have a minimum of 5 or maximum of 32 octets.
5636107	Engine ID specified is based on an IP address, and must therefore be 9 octets in length.
5636108	Engine ID specified is based on an IPv6 address, and must therefore be 21 octets in length.
5636109	Engine ID specified is based on a MAC address, and must therefore be 11 octets in length.
5636110	Engine ID starting with first bit set as 0 in the first octet needs to be 12 octets in length.
5636111	Engine ID cannot have all zeroes.
5636112	Invalid Engine ID specified.
5636113	Cannot enable SNMP user capability for data SVM.
5636116	Cannot read SNMP user capability for data SVM.
5636121	User account name is reserved for use by the system.
5636123	Cannot create an SNMP user with a role other than readonly, none, or admin.
5636124	Cannot create an SNMP user with a role other than vsadmin-readonly, none, or vsadmin.
5636148	Failed to discover SNMPv3 engine ID of remote SNMP agent.
5636150	The switch_address parameter can be specified only for administrative SVMs.
5636152	0.0.0.0 cannot be specified as the IP Address for the switch_address parameter.

Error Code	Description
5636153	Engine ID is already associated with user.
7077897	Invalid character in username. Valid characters":" A-Z, a-z, 0-9, ".", "_", and "-". Note that the user name cannot start with "-".
7077899	Username does not meet length requirements.
7077906	Cannot use given role with this SVM because a role with that name has not been defined for the SVM.
9043995	Failed to create SNMP community. Reason":" SNMPv1 and SNMPv2c are not supported when cluster FIPS mode is enabled.
9043999	ONTAP failed to create an SNMPv3 user because SNMPv3 is disabled in the cluster.
9044020	Customized engine-id cannot be specified for community users.
9044021	The specified authentication protocol is not supported when cluster FIPS mode is enabled.
9044022	The specified privacy protocol is not supported when cluster FIPS mode is enabled.
9044023	The switch_address parameter can be specified only for creating remote SNMPv3 users.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

Optional name and UUID of owning Storage Virtual Machine (SVM).

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snmpv3

Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
authentication_password	string	Authentication protocol password.
authentication_protocol	string	Authentication protocol.
privacy_password	string	Privacy protocol password.
privacy_protocol	string	Privacy protocol.

snmp_user

An SNMP user can be an SNMPv1/SNMPv2c user or an SNMPv3 user. SNMPv1/SNMPv2c user is also called a "community" user. An SNMPv3 user, also called a User-based Security Model (USM) user, can be a local SNMPv3 user or a remote SNMPv3 user. A local SNMPv3 user can be used for querying ONTAP SNMP server over SNMPv3 and/or for sending SNMPv3 traps. The local SNMPv3 user used for sending SNMPv3 traps must be configured with the same authentication and privacy credentials on the traphost receiver as well. A remote SNMPv3 user is also configured on a remote switch and used by ONTAP SNMP client functionality to query the remote switch over SNMPv3. An SNMP user is scoped to its owning Storage Virtual Machine (SVM). Owning SVM could be a data SVM or the administrative SVM.

Name	Type	Description
authentication_method	string	Optional authentication method.
comment	string	Optional comment text.
engine_id	string	Optional SNMPv3 engine identifier. For a local SNMP user belonging to the administrative Storage Virtual Machine (SVM), the default value of this parameter is the SNMPv3 engine identifier for the administrative SVM. For a local SNMP user belonging to a data SVM, the default value of this parameter is the SNMPv3 engine identifier for that data SVM. For an SNMPv1/SNMPv2c community, this parameter should not be specified in "POST" method. For a remote switch SNMPv3 user, this parameter specifies the SNMPv3 engine identifier for the remote switch. This parameter can also optionally specify a custom engine identifier.
name	string	SNMP user name.
owner	owner	Optional name and UUID of owning Storage Virtual Machine (SVM).
snmpv3	snmpv3	Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
switch_address	string	Optional remote switch address. It can be an IPv4 address or an IPv6 address. A remote switch can be queried over SNMPv3 using ONTAP SNMP client functionality. Querying such a switch requires an SNMPv3 user (remote switch user) to be configured on the switch. Since ONTAP requires remote switch user's SNMPv3 credentials (to query it), this user must be configured in ONTAP as well. This parameter is specified when configuring such a user. • example: 10.23.34.45 • Introduced in: 9.7 • readCreate: 1 • x-nullable: true

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Manage individual SNMP users

Support SNMP users engine_id name endpoint overview

Overview

Defines, retrieves, updates and deletes an individual SNMP user.

Examples

Retrieves the details of an SNMP user

```
# The API:
GET "/api/support/snmp/users/{engine_id}/{name}"

# The call:
curl -H "accept: application/hal+json" -X GET "https://<mgmt-
ip>/api/support/snmp/users/80000315056622e52625a9e911a981005056bb1dcb/snmp
v1user2"

# The response:
{
"engine_id": "80000315056622e52625a9e911a981005056bb1dcb",
"name": "snmpv1user2",
"scope": "cluster",
"owner": {
  "name": "cluster-1",
  "uuid": "26e52266-a925-11e9-a981-005056bb1dcb"
},
"authentication_method": "community",
"_links": {
  "self": {
    "href":
"/api/support/snmp/users/80000315056622e52625a9e911a981005056bb1dcb/snmpv1
user2"
  }
}
}
```

Updates the comment parameter for an individual SNMP user

```
# The API:
PATCH "/api/support/snmp/users/{engine_id}/{name}"

# The call:
curl -H "accept: application/json" -H "Content-Type: application/json" -X
PATCH "https://<mgmt-
ip>/api/support/snmp/users/8000031505b67667a26975e9118a480050568e6f74/publ
ic" -d '{"comment":"Default SNMP community"}'

# The response:
200 OK
{}
```

Deletes an individual SNMP user in the cluster

```
# The API:
DELETE "/api/support/snmp/users/{engine_id}/{name}"

# The call:
curl -H "accept: application/json" -H "Content-Type: application/json" -X
DELETE "https://<mgmt-
ip>/api/support/snmp/users/8000031505b67667a26975e9118a480050568e6f74/snmp
user"

# The response:
200 OK
{}
```

Delete an SNMP user

DELETE `/support/snmp/users/{engine_id}/{name}`

Introduced In: 9.7

Deletes an SNMP user. The engine ID can be the engine ID of the administrative SVM or a data SVM. It can also be the SNMPv3 engine ID of a remote switch.

Related ONTAP commands

- `security login delete`
- `system snmp community delete`

Learn more

- DOC /support/snmp/users/{engine_id}/{name}

Parameters

Name	Type	In	Required	Description
engine_id	string	path	True	Engine ID of owning SVM or remote switch.
name	string	path	True	SNMP user name.
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve SNMP user details

GET `/support/snmp/users/{engine_id}/{name}`

Introduced In: 9.7

Retrieves the details of an SNMP user. The engine ID can be the engine ID of the administrative SVM or a data SVM. It can also be the SNMPv3 engine ID of a remote switch.

Related ONTAP commands

- `security snmpusers -vserver <SVM Name> -username <User Name>`
- `security login show -application snmp -vserver <SVM Name> -user-or-group-name <User Name>`

Learn more

- DOC /support/snmp/users/{engine_id}/{name}

Parameters

Name	Type	In	Required	Description
engine_id	string	path	True	Engine ID of owning SVM or remote switch.
name	string	path	True	SNMP user name.
fields	array[string]	query	False	Specify the fields to return.
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_method	string	Optional authentication method.
comment	string	Optional comment text.

Name	Type	Description
engine_id	string	Optional SNMPv3 engine identifier. For a local SNMP user belonging to the administrative Storage Virtual Machine (SVM), the default value of this parameter is the SNMPv3 engine identifier for the administrative SVM. For a local SNMP user belonging to a data SVM, the default value of this parameter is the SNMPv3 engine identifier for that data SVM. For an SNMPv1/SNMPv2c community, this parameter should not be specified in "POST" method. For a remote switch SNMPv3 user, this parameter specifies the SNMPv3 engine identifier for the remote switch. This parameter can also optionally specify a custom engine identifier.
name	string	SNMP user name.
owner	owner	Optional name and UUID of owning Storage Virtual Machine (SVM).
scope	string	Set to "svm" for data Storage Virtual Machine (SVM) SNMP users and to "cluster" for administrative SVM SNMP users.
snmpv3	snmpv3	Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
switch_address	string	Optional remote switch address. It can be an IPv4 address or an IPv6 address. A remote switch can be queried over SNMPv3 using ONTAP SNMP client functionality. Querying such a switch requires an SNMPv3 user (remote switch user) to be configured on the switch. Since ONTAP requires remote switch user's SNMPv3 credentials (to query it), this user must be configured in ONTAP as well. This parameter is specified when configuring such a user. • example: 10.23.34.45 • Introduced in: 9.7 • readCreate: 1 • x-nullable: true

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_method": "usm",
  "comment": "This is a comment.",
  "engine_id": "80000315055415ab26d4aae811ac4d005056bb792e",
  "name": "snmpv3user2",
  "owner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "scope": "svm",
  "snmpv3": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication_protocol": "sha2_256",
    "privacy_protocol": "aes128"
  },
  "switch_address": "10.23.34.45"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	returned_error	

Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

owner

Optional name and UUID of owning Storage Virtual Machine (SVM).

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snmpv3

Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
_links	_links	
authentication_protocol	string	Authentication protocol.
privacy_protocol	string	Privacy protocol.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update the comment parameter of an SNMP user

PATCH `/support/snmp/users/{engine_id}/{name}`

Introduced In: 9.7

Updates the comment parameter of an SNMP user.

Optional properties

- `comment` - Comment text.

Related ONTAP commands

- `security login modify`

Learn more

- DOC /support/snmp/users/{engine_id}/{name}

Parameters

Name	Type	In	Required	Description
engine_id	string	path	True	Engine ID of owning SVM or remote switch.
name	string	path	True	SNMP user name.

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
comment	string	Optional comment text.

Example request

```
{
  "comment": "This is a comment."
}
```

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2621475	This operation is not allowed on a node SVM.
2621699	This operation is not allowed on a system SVM.
5636123	Cannot create an SNMP user with a role other than readonly, none, or admin.
5636124	Cannot create an SNMP user with a role other than vsadmin-readonly, none, or vsadmin.
5832712	Cannot modify attributes for user "diag."
7077906	Cannot use given role with this SVM because a role with that name has not been defined for the SVM.
9043999	ONTAP failed to create an SNMPv3 user because SNMPv3 is disabled in the cluster.

Also see the table of common errors in the Response body overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

owner

Optional name and UUID of owning Storage Virtual Machine (SVM).

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

snmpv3

Optional parameter that can be specified only for an SNMPv3 user i.e. when 'authentication_method' is either 'usm' or 'both'. This parameter defines the SNMPv3 credentials for an SNMPv3 user.

Name	Type	Description
authentication_protocol	string	Authentication protocol.
privacy_protocol	string	Privacy protocol.

snmp_user

An SNMP user can be an SNMPv1/SNMPv2c user or an SNMPv3 user. SNMPv1/SNMPv2c user is also called a "community" user. An SNMPv3 user, also called a User-based Security Model (USM) user, can be a local SNMPv3 user or a remote SNMPv3 user. A local SNMPv3 user can be used for querying ONTAP SNMP server over SNMPv3 and/or for sending SNMPv3 traps. The local SNMPv3 user used for sending SNMPv3 traps must be configured with the same authentication and privacy credentials on the traphost receiver as well. A remote SNMPv3 user is also configured on a remote switch and used by ONTAP SNMP client functionality to query the remote switch over SNMPv3. An SNMP user is scoped to its owning Storage Virtual Machine (SVM). Owning SVM could be a data SVM or the administrative SVM.

Name	Type	Description
comment	string	Optional comment text.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

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